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Order Cataphracti

Suborbital chain of bones all entering into edge of orbit, only hardly extended over cheek. Thin suborbital hypertrophied, formed as stay impinging on front wall of preopercle. Post-temporal variously joined with epitei and pterotei. Maxillaries with well developed processes gliding over front of preopercle. Scapular arch normal, post-temporal and pterotemporal forming part, and latter intervening between post-temporal and pteroparula. Air bladder not joined with alimentary canal. Ventrals anterior, with spine and 5 or fewer soft rays.

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A large and very variable group, chiefly notable for the presence of the bony stay on the cheek. From the rockfishes, the most generalized forms, a continuous series extends to the gurnards.

Analysis of Families

a. Loricata: Head not completely cuirassed.

b. Scorpaeniformes. Ventrals narrowly separated.

c. Dorsal begins well back at nape, far behind eye.

d. Body scaly, sometimes with fleshy flaps. Scorpaenidae.

d.² Body without scales.

e. Skin papillate, carunculate or tuberculate, with dermal flaps or cirri; body robust. Synancejidae.

e.² Skin velvety or with minute prickles, without flaps or cirri; body compressed. Caracanthidae.

c.² Dorsal advanced, begins close behind, over, or before eye.

Aplousactidae.

b.² Platycephaliformes. Ventrals moderately or widely separated.

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f.¹ Pectorals inserted well
before ventrals. Platycephalidae.

f.² Ventrals inserted before
pectoral.

g.¹ Body covered with moderate
to large scales; no detached
pectoral rays. Bembradidae.

g.² Body naked, with row
of bony plates along side;
3 detached pectoral rays.

Oplichthyidae.

a.² Craniomi. Head completely
enrased.

h.¹ Body covered with scales.

i.¹ Ventrals widely
separated. Triglidae.

i.² Ventrals narrowly
separated. Cephalacanthidae.

h.² Body covered with spinate
bony plates. Peristediidae.

Family Scorpaenidae

Body oblong, more or less compressed. Head large, robust, with one or more ridges above ending in spines. Mouth terminal, usually large. Villiform teeth on jaws and vomer, usually also on palatines. Premaxillaries protractile. Maxillary broad, without supplemental bone, not slipping under preorbital. Narrow bony stay backward from suborbital toward preopercle. Preopercle with 4 or 5 spines, opercle with 2. Gill openings wide, extend forward below, membranes

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Depth $2\frac{1}{8}$ to $2\frac{1}{5}$; head $3\frac{2}{5}$ to 4, width
 2 to $2\frac{1}{8}$. Snout 2 to $2\frac{1}{5}$; eye $2\frac{1}{3}$ to $4\frac{1}{6}$,
 1 to $2\frac{1}{3}$ in snout, $1\frac{3}{4}$ in interorbital to
greater than interorbital in young; teeth
about 32 to 36 in each jaw; maxillary
 $3\frac{4}{5}$ to 4 in head; interorbital $2\frac{7}{8}$ to $3\frac{1}{10}$,
broadly convex; opercle, preopercle limb,
scapular arch and suborbitals striated
finely, with opercle and suborbitals nearly
smooth in young. Gill rakers $5+16$,
short, weak ciliate points.

Scales minute, ovoid, circuli 70 to 120.
Cheeks covered with small scales, present
also in young.

D. XIII, 10, I, fifth spine $1\frac{7}{8}$ to 2 in
head, fifth ray $1\frac{2}{5}$ to $1\frac{3}{5}$; A. VII, 9, I,
third spine $1\frac{5}{8}$ to 2, third ray $1\frac{1}{2}$ to 2,
caudal emarginate in young, becoming
deeply forked with slender pointed
lobes with age, upper slightly larger,
 $2\frac{3}{5}$ to $3\frac{3}{5}$ in combined head and body,
though shorter than head in young;
least depth of caudal peduncle $3\frac{1}{8}$ to
4 in head; pectoral $1\frac{1}{5}$ to $1\frac{1}{3}$; ventral
 $1\frac{1}{2}$ to $1\frac{3}{5}$.

Back gray-brown, also upper surface
of head. Whole head and body with
very numerous thick-set gray-white
spots, with age larger than reticulating
darker interspaces, though much more
numerous, smaller and crowded in sides
of abdomen and belly. Thus in young
but 2 or 3 rows off pale spots in cheeks,

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separate and free from isthmus.
Usually no slit behind fourth
gill. Pseudobranchiae large.
Air bladder usually present.
Pyloric appendages few,
less than 12. Scales ctenoid,
sometimes cycloid, usually
well developed, sometimes
nearly obsolete. Lateral line
single, continuous, concurrent
with back. Dorsal continuous,
sometimes deeply notched in
2 parts, spines strong, 8 to 16,
soft rays same. Anal rather
short, spines 3, rays 10 to 15.
Pectoral rays branched, some
of lower simple.

Genera numerous. Large
^{found on}
 fishes frequently rocky shores,
 valued as food and many
 viviparous.

Analysis of Genera

a. Body scaly, sometimes with fleshy or skinny flaps; pectoral without free rays.

b. Pectoral fin with lowermost ray not detached as a separate feeder.

c. Dorsal spines not greatly elongated with slender free tips; pectorals moderate.

d. Dorsal fins continuous, undivided.

e. Spinous dorsal begins well behind preopercle.

f. Glyptaucheninae. Dorsal spines 17; head set off from body by deep postocular groove, first front profile vertical. Glyptauchen.

f. Sebastinae. Dorsal spines 13 to 16; front profile more or less oblique.

g. Dorsal spines 15 or 16. Sebastolobus.

g. Dorsal spines 13 (rarely 14).

h. Lower pectoral rays undivided; vertical fins scaly basally.

i. Head and body moderately long, not attenuated; pectoral rounded, upper rays not abruptly shorter.

j. Head and lateral line without filaments.

k. Suborbital ridge without series of hooked spines.

l. Interorbital broad, flat, or convex; gill rakers longer.

Sebastodes.

l.² Interorbital narrow, mostly concave; gill rakers shorter, thick.

Sebastichthys.

k.² Suborbital ridge with 5 antorse spines; dorsal spines lower than rays.

Scorpaenodes.

k.³ Suborbital ridge and preopercle with row of strong hooked spines; dorsal spines long, strong, membranes incised.

Sebastomus.

k.⁴ Suborbital ridge finely serrate; dorsal spines low, lower than soft dorsal.

Hoplosebastes.

f.² Head and lateral line
with short filaments.

Thysanichthys.

i.² Head and body slender,
former elongated and pointed;
pectoral with upper 9 rays
abruptly short, subequal,
upper 10 of lower simple rays
longer; no palatine teeth.

Hypomacrus.

h.² Lower pectoral rays divided;
vertical fins scaleless.

m.¹ Maxillary scaly.

Leosabastes.

m.² Maxillary naked,
with 4 or 5 beels.

Maxillicosta.

f.³ Scorpaeninae. Dorsal spines 12.

n.¹ Bones of head without large
muciferous cavities; occiput
with 2 pairs of spines; scales,
or with dermal flaps.

c.¹ Caudal free from dorsal.

f.¹ Some or all pectoral rays
branched.

Brachypterois new

- g. Lateral line developed, complete.
 r. Palatine teeth present.
 s. Scales on top of head ctenoid;
 armature of head moderate.
 t. Eye without supraorbital flap.
 u. Air bladder well developed.

Sebastiscus.

- u. Air bladder obsolete. Helicolenus.
 t. Eye with long supraorbital
 flap; snout elongate. Merinthe.
 s. Scales on top of head cycloid,
 or absent; no air bladder.

v.

Scorpaena.

v.

- r. no palatine teeth. Ruboralga.

w. Third dorsal spine
not extended.

x. Head scaly, also
prepectoral region.

Scorpaenopsis.

y. Only few scales on
head behind eyes
and on breast, pre-
pectoral region and
front of belly naked.

Scorpaenopsella.

w.² Third dorsal ray extended. Peloropsis.

g.² Lateral line incomplete, only on 4 or 5 scales behind suprascapula.

ry.¹ Snout greater than eye. Rhinopias.

y.² Snout less than eye. Phenacoscorpius.

L.² Pectoral rays all simple.

z.¹ Lateral line without filaments.

aa.¹ Dorsal spines subequal.

bb.¹ No supraorbital tentacle.

cc.¹ Scales 30 in l.l., tubes 22+4.

Hipposcorpaena.

cc.² Scales 42+4 in l.l.

Pontinus.

bb.² Supraorbital tentacle half of head.

Hemapontinus.

aa.² Fourth dorsal spine elongate.

Dracurus.

z.² Lateral line with row of filaments.

Crossoscorpius.

o.² Soft dorsal united with caudal.

Taeniarotus.

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n.² Bones of head with large muciferous cavities; spines of head little developed; scales deciduous, cycloid.

dd. Anal spines 3.

Setarches.

dd.² Anal spines 2.

Macroscorpius.

f. 3 Pterodichthyinae new subfamily.
Dorsal spines 11; anal spines 2.

ee. Membranes of spinous dorsal entire.

Pterodichthys.

ee.² Membranes of spinous dorsal incised.

Pteropelorus.

e.² Centropogoninae new subfamily.
Spinous dorsal begins over vertical line of preopercle.

Centropogon.

d.² Plectrogeniinae new subfamily.
Dorsal fin divided, first with 10 spines and second with 7 rays.

Plectrogenium.

c.² Pteroinae. dorsal spines 12 or 13,
greatly extended, venomous;
pectoral more or less elongate;
top of head with spinous crests;
anal spines 3; no palatine teeth.
ff. Preorbital without tentacle,
or only short filament present.

bb.² Caudal pointed. Brachypterois.

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gg.¹ Pectoral greatly elongate, all rays simple, larges free at tips and reach to or beyond caudal; no bony crests at nape. Pterois.

gg.² Pectoral moderately produced, rays united by membrane nearly to tips.

hh.¹ Large saber shaped crest of bone each side of nape. Eboria.

hh.² Nape without high bony crests.

bb.² Caudal rounded. Brachyrus.

bb.³ Caudal truncate, upper and lower ray more or less extended as filament.

Parapterois.

ff.² Preorbital with exceedingly long tentacle or barbel. hemapterois.

b.² Apestinae. Pectoral usually with lowermost ray detached; dorsal begins on head often over eye.

cc.¹ Dorsal spines 13 to 17.

dd.¹ Dorsal begins behind eye; spines 15; pectoral very long, nearly reaches caudal. Apestus.

dk.² Dorsal begins over front eye edge, spines 14. Cottapistella.

dk.³ Dorsal begins before eye, spines 15 to 17. Amblyapistus.

ff.² Dorsal spines 7; pectoral long at head. Lysodermus.

a.² Body scaleless, sometimes with rudimentary dermal flaps, or if present scales

ll.¹ Scorpaenellinae new subfamily. Dorsal spines 12, fin undivided; pectoral moderate, large, rays all simple, united; armature of head well developed. Scorpaenella.

ll.² Minoinae. Dorsal spines 10 or 11, fin undivided; pectoral moderate, lower ray detached; top of head with spinous crests. Minous.

ll.³ Inimicinae. Dorsal spines 15 to 18, first 3 spines separated; 2 lower pectoral rays nearly detached.

men.¹ Skin smooth; dorsal spines 15 to 17; anal rays 9 to 13. Inimicus.

men.² Skin with short filaments, and flaps; dorsal spines 17; and with spine and 8 rays. Chorismopelorus.

Glyptaucheninae

Forehead or front of head nearly vertical. Greatly depressed occipital region produces peculiar physiognomy as if head were set off from body.

Genus Glyptauchen Günther

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Glyptauchen Günther, Cat. Fish.
Brit. Mus., vol. 2, p. 121, 1860.

(Type Apistes panduratus
Richardson, monotypic.)

Head and body compressed.

Front or forehead almost vertical.

Mouth small, ^{maxillary extends below eye.} Crown of head

with deep saddle like impression.

Occipital region greatly depressed or concave or with its bottom ^{below} level with top of eye. Preorbital,

preopercle and opercle armed.

Villiform teeth in jaws, on vomer and palatines.

Branchiostegals 7. Scales very small. Lateral line distinct.

Dorsals continuous, begin over

Known chiefly by its color, which
olivaceous with several irregular,
diffuse yellowish longitudinal lines
and diffuse brownish cross bands.
Body and fins often clouded or spotted
with darker.

Red Sea, Zanzibar, Madagascar,
Mauritius, Rodrigues, Natal, East Indies,
Philippines, Queensland, New South Wales,
Micronesia.

opercle, spinous fin with 17
spines, much more developed
than small soft fin of but
7 rays. Anal with 3 spines
and 6 rays. Pectoral rather
large, without appendage or
free ray. Ventral rather
large, with spine and 5
rays.

Australia.

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Whitley says:

Unfortunately, these remarkable Goblin Fishes are very rarely captured and nothing seems to be known regarding their habits. They are probably sedentary, carnivorous fishes of the rocky zone beyond tidal limits, and it is probable that their preorbital and dorsal spines could inflict painful wounds. The largest specimen of Glyptauchen on record is only eight inches in length.

Analysis of Species

- a.¹ Body slender; 3 distinct spines each side of spinous dorsal origin. panduratus.
- a.² Body deeper; 2 spines each side of spinous dorsal origin. insidiator.

Glyptauchen panduratus (Richardson)

Apistes panduratus Richardson,
 Proc. Zool. Soc., London, vol. 18,
 p. 58, Pisces pl. 1, figs. 3-4, ^{pl. 12,} 1850
 (type locality, King George's Sound,
 Western Australia); Ann. Mag.
 Nat. Hist., London, ser. 2, vol. 7, p. 274,
 April 1. 1851.

Hist. Soc., vol. 16, pt. 2, 1905, p. 330
(Persian Gulf). — Gilchrist and
Thompson, Ann. South Afr. Mus., vol. 11, pt.
2, 1911, p. 57 (Natal).

Siganus nebulosus Fowler, Proc. Acad.
Nat. Sci. Phila., 1925, p. 253 (Delagoa Bay).

Amphacanthus maculosus Duoy and
Gaimard, Voy. Uranie, Zool., January 29-
May 26, 1825, p. 370. Sydney Bay, Port
Jackson.

→ Amphacanthus gymnopareus Richardson,
Ann. Mag. Nat. Hist. London, vol. 11, 1843,
p. 174. Port Essington.

→ Amphacanthus olivaceus Valenciennes, l.c.,
vol. 10, 1835, p. ¹⁶³~~162~~. Mauritius.

Xenthis flava de Vis, Proc. Linn. Soc. New
South Wales, vol. 9, 1884 (1885), p. 462.

No locality. — Kent, Great Barrier Reef,
1893, p. 286 (Queensland).

{ Amphacanthus abhortani Valenciennes, l.c., vol. 10, 1835,
p. 143. Mauritius. — Sauvage, Hist. Nat. Madagascar, Poiss.,
1891, p. 288, plate 35, fig. 7 (type).

Glyptochen panduratus Günther,
Cat. Fish. Brit. Mus., vol. 2, p. 121,
1860 (copied).

— Macleay, Proc. Linn. Soc. New
South Wales, vol. 5, pt. 3, p. 434,
Feb. 1881 (copied).

— Woodward, Western Austral.
Year Book, p. 271, 1900-1 (1902)
(reference) — McCulloch,

Austral. Mus. Mem., ~~vol.~~ no. 5,
pt. 3, p. 391, Nov. 28, 1929 (reference).

— Whitley, Rec. Austral. Mus.,
vol. 18, no. 3, p. 117, March 25, 1931
(compiled).

— Waite, Rec. South Austral. Mus., vol. 2, pt. 1,
p. 167, fig., 1921 (reference).

— Castelnau, Proc. Zool. Acclimat. Soc.
Victoria, vol. 1, p. 244, 1872 (St. Vincent's
Gulf, South Australia); vol. 2, p. 62,
1873.

Glyptauchen panduratus
deruptus Whitley, Rec. Austral.
Mus., vol. 18, p. 117, 1931 (on
Castelnau).

Mouth cleft reaches vertical
from front edge of eye. D.
XVII, 7, seventh spine longest;
A. III, 6, second spine long as
third, but stouter; pectoral
very large, nearly reaches
anal origin; ventral rays
I, 5. (Günther.)
Western Australia. Reaches
143 mm.

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Glyptauchen insidiator Whitley

Glyptauchen insidiator Whitley,
Rec. Australian Mus., vol. 18, p. 118,
pl. 14, 1931 (type locality, Kurnell,
Botany Bay, New South Wales).

— Mayer, Ann. Ver. Zool. Mus. Nat.
Karlsruhe, vol. 14, 1885, 1.22 (North Lobe);
Karlsruhe, vol. 1, 1895, 1.529 (Kargm, Karlsruhe,
Cottin). — Rogers, Journ. Boundary Nat.

Chironemus aboriginalis Whitley

Chironemus aboriginalis Whitley,
Austral. Zoologist, vol. 6, pt. 4,
p. 321, Feb. 13, 1931 (on Ogilby and
Roughley).

— Stead, Edible Fish. New South Wales, p. 70,
1908. — Ogilby, Rec. Austral. Mus., vol. 1,
no. 1, p. 207 (reference).

Chironemus marmoratus (not
Günther) Ogilby, Edible Fish. New
South Wales, p. 54, pl. 17, 1893
(New South Wales; Lord Howe
Island); — Roughley, Fishes of
Queensland, p. 121, pl. 39, 1916

Glyptauchen pandiratus (not
Richardson) Johnston, Proc. Roy.
Soc. Tasmania, p. 114, 1882 (1883)
(Tasmania) : — Ogilby, Cat. Fish.
New South Wales, p. 21, 1886
(reference); Rep. Comm. Fish. New
South Wales, append. A, p. 21,
1886 (1887) (Port Jackson record).
— Johnston, op. cit., p. 31, 1890 (1891).
— Waite, Mem. New South Wales
Nat. Club, vol. 2, p. 47, Nov. 1904
(reference). — Stead, Proc. Linn.
Soc. New South Wales, vol. 30, p.
486, April 1906 (South Reef, Port
Jackson Heads); Fishes of
Australia, pp. 191, 195, fig. 68,
1906. — McCulloch, Austral.
Zool., vol. 2, pt. 3, p. 117 (not fig.),
1922.

— Lord, Proc. Roy. Soc. Tasmania,
p. 70, 1922 (1923); Journ. Pan Pac.
Res. Inst., vol. 4, no. 4, p. 15, 1927
(reference). — Lord and Scott,
Syn. Vert. Tasmania, p. 85, 1924.

Glyptarchen insidiator mirandus
Whitley, Rec. Austral. Mus., vol.
18, no. 3, p. 120, March 25, 1931
(type locality, Tasmania).

much longer than broad. 549
Depth $2\frac{7}{8}$; head $2\frac{3}{5}$, snout
 $5\frac{3}{5}$ in head; orbit $3\frac{1}{3}$, greater
than snout; maxillary reaches
 $\frac{2}{3}$ in orbit, length $4\frac{1}{8}$ in head;
villiform teeth in jaws, on
vomer and palatines.

Two nearly vertical nasal
spines on snout end in 2 knobs
above, separated by narrow
furrow; supraorbitals overhang
eyes and have strong spineless
ridges superiorly; 2 similar
ridges on interorbital area,
separate anteriorly and
diverge posteriorly to join
transverse series of irregular
ridges behind eyes; saddle-
shaped occipital depression
crossed by 2 longitudinal ridges;
preorbital with large posterior
and small anterior spine,

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former erectile and attached to spine at commencement of strong, irregular but spineless suborbital ridge; preopercle with 5 spines, lower short and triangular, uppermost very long, strong and with small spine at base; 2 long curved spines on opercle; 2 pairs of short, strong, curved spines on each side of dorsal fin origin, posterior spines strongest and striated; strong oblique scapular spine.

Scales 30 in lateral series; tubular scales 27 or 28 in lateral line, each with posterior rounded flap except on caudal peduncle. Head entirely naked. Below dorsal fin skin naked, smooth anteriorly and plicated posteriorly towards scaly

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sides; thorax scaleless before
line from origin of lateral line
to attachment of last ventral
ray; breast naked before
origins of last ventral rays.
Scales large, imbricate, cycloid,
leave naked space between vent
and anal fin.

D. XVII, 7, origin behind occip-
ital cavity, fifth spine 2 on
head, second ray $1\frac{7}{8}$; A. III, 5,
second spine 2, first ray $1\frac{4}{5}$;
caudal $1\frac{2}{5}$, rounded behind;
depth of caudal peduncle 4;
pectoral $1\frac{1}{4}$, rays 14 or 15;
ventral rays I, 5, fin $1\frac{2}{5}$ in head.

Body and fins blackish,
with light parts of fins and
caudal peduncle light yellowish.
Head brownish above, yellowish
below, mottled on mouth and

around eye. In life eye red
and rosy mark on opercle.
Breast and pectoral axil
yellowish, with brownish tinge.
Over pectoral root and obliquely
short space on side white
mark. Scattered white spots
on first dorsal and 2 small
white blotches on back. Paired
fins dark brown, with white
mottling on upper pectoral rays.
Length 130 mm. (Whitley.)
New South Wales.

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Genus Sebastolobus Gill

Sebastolobus Gill, Rep. Smithsonian
Inst., p. 375, 1880 (1881). (Type
Sebastes macrochir Günther,
orthotypic.)

Body well compressed. Head large, compressed. Snout short. Eyes large, advanced. Mandible protrudes in front. Maxillary reaches well below eye. Palatine teeth present. Gill rakers rather robust. Spines of head prominent and well developed. Ventrals 29, of which 18 caudal. Scales large, ctenoid, in oblique series equally and similarly above and below lateral line. Top of head scaly. Dorsal spines 15 or 16, moderately long. Anal with 3 spines and 5 rays. Pectoral with broad deep base, extended backward near upper margin and not medially; lower rays thickened, extending much beyond rays next above in distinct lobes. Ventral ^{inserted} directly below pectoral base, outer rays extended, thick and branched.

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Sebastolobus macrocher (Günther)

Sebastes macrocher Günther, Rep.
Voy. Challenger, vol. 1, pt. 6, p. 65, pl.
27, 1880 (type locality, Inland
Sea of Japan, off Enoshima,
in 345 fathoms).

Sebastolobus macrocher Jordan and
Evermann, Bull. U. S. Nat. Mus., no. 47,
pt. 2, p. 1763, 1898 (copied). — Jordan
and Snyder, Annot. Zool. Japon.,
vol. 3, p. 97, 1901 (reference). —
Jordan and Starks, Proc. U. S. Nat.
Mus., vol. 27, p. 94, 1904 (Niigaki;
Misaki; Nemuro; Hokkaido; off
Manazura Point, in 120 to 265
fathoms). — Franz, Abhandl. Kon.
Bayer. Akad. Wiss., vol. 4, Suppl.
Band 1, p. 70, 1910 (Yokohama;
Aburatsubo).

— Jordan and Hubbs, Mem. Carnegie
Mus., vol. 10, No. 2, p. 259, June 27,
1925 (western Hokkaido; Kushiro;
Misaki). — Schmidt, Trans. Pac.
Comm. Acad. Sci. U.S.S.R., vol. 2, p.
94, 1931 (Misaki; Hakodate).

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Sebastolobus altivelis (part)
Jordan and Evermann, Bull. U. S.
Nat. Mus., No. 47, pt. 2, p. 1763, 1898.

Depth $2\frac{4}{5}$ to $3\frac{1}{3}$; head $2\frac{1}{4}$ to $2\frac{2}{5}$,
width $2\frac{1}{10}$ to $2\frac{1}{5}$. Snout 4 in head
from snout tip; eye $2\frac{4}{5}$ to $3\frac{1}{5}$,
greatly exceeds snout in
interorbital; maxillary reaches
 $\frac{2}{3}$ to $\frac{4}{5}$ in eye, expansion 2 to
 $2\frac{2}{5}$ in eye, length 2 in head
from snout tip; teeth fine,
villiform, granular, in bands
on jaws, on vomer and palatines;
interorbital 7 to 8, concave. Gill
rakers 6 + 13, clavate, finely
serrate, $3\frac{1}{8}$ in eye; gill filaments
 $\frac{7}{8}$ of gill rakers. Pair of
nasal spines; 1 antero-supraorbital
spine and 3 postero-supraorbitals,
followed by pair of occipitals.
with long forward keel to each
and short one to nuchal pair;
strong postocular spine and also
strong suprascapular spine; 2 very
short broad spines at lower

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front preopercle edge; 6 spines on suborbital stay, of which 2 on preorbital; 5⁺ preopercle spines, with uppermost largest and with small basal spine; 2 small opercular spines, ^{upper} posterior.

Scales 49 or 50 + 3 close along and above lateral line; tubular scales 31 + 2 in lateral line; 6 scales above, 12 below, 48 to 50 predorsal forward to upper lip; 10 scales from lower eye edge along suborbital stay back to its junction with preopercle keel, and 12 in vertical series on cheek below. Maxillary with small scales. Bases of fins finely scaly. Scales with 8 or 9 basal radiating striae; 30 to 38 apical denticles, with 3 or 4 transverse series of basal elements; circuli fine.

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D. XIV or XV, 9, I or 10, I, fourth spine $2\frac{2}{5}$ to $2\frac{3}{5}$ in total head length, third ray 2 to $2\frac{1}{4}$; A. III, 5, I, second spine $2\frac{2}{5}$ to $2\frac{3}{5}$, first ray 2 to $2\frac{1}{3}$; caudal $1\frac{1}{2}$ to $1\frac{2}{3}$, truncate; least depth of caudal peduncle $4\frac{1}{5}$ to $4\frac{1}{3}$; pectoral $1\frac{1}{4}$ to $1\frac{1}{3}$, rays I, 18 or I, 21, II, fin bilobed; ventral rays I, 5, fin $1\frac{1}{4}$ to $1\frac{3}{5}$ in total head length.

Largely uniform dull brown. Blackish blotch on membranes of from seventh to eleventh dorsal spines basally.

Japan.

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U. S. N. M., No. 48145. Esau,
Japan. V. Kozawa. Length 330 mm.

U. S. N. M., No. 71612. Japan.
Bureau of Fisheries. Length 163 mm.

Genus Sebastodes Gill

Sebastodes Gill, Proc. Acad. Nat. Sci. Philadelphia, p. 165, 1861.

Type Sebastes paucispinis Ayres, monotypic.)

Sebastichthys Gill, op. cit., p. 329, 1862. (Type Sebastes nigrocinctus Ayres, monotypic.)

Sebastomus Gill, op. cit., p. 147, 1864. (Type Sebastes melanops Girard, orthotypic.)

Sebastomus Gill, op. cit., p. 147, 1864. (Type Sebastes rosaceus Girard, monotypic.)

Auctomenium Eigenmann and Beeson, Amer. Naturalist, p. 669, 1893. (Type Sebastodes ovulis Ayres, orthotypic.)

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8317 and 11133. Lode Bay, Destacado Island. March 13, 1909. Length 214 to 290 mm.

8822 and 8826. Maculabo Island. June 13, 1909. Length 310 to 319 mm.

21619. Makesi Island, Palawan. April 5, 1909. Length 139 mm.

6156 and 6157. Mantalay, Mindoro. June 4, 1908. 5 examples. Length 51 to 270 mm.

9048. Masbate Reef, Masbate. April 20, 1908. Length 163 mm.

6269. Medio Island, Galera Bay, Mindoro. June 9, 1908. Length 253 mm.

7940. Pagapas Bay, Luzon. February 20, 1909. Length 205 mm. Large round shoulder spot dark chocolate, margined with white circle. Spots on body light reddish brown. Ground color lighter above pectorals and on shoulder.

8753. Parangpong Island. June 10, 1908. Length 374 mm.

Primospina Eigenmann and Beeson,
op. cit. (Type Sebastichthys
mystinus Jordan and Gilbert,
orthotypic.)

Auctospina Eigenmann and Beeson,
op. cit. (Type Sebastes auriculatus
Girard, monotypic.)

Rosicola Jordan and Evermann, Rep.
U. S. Fish Comm., pt. 21, p. 429, 1895
(1896). (Type Sebastes pinniger
Gill, designated by Jordan, Genera
of Fishes, pt. 4, p. 474, 1920.)

8795. Butamanan Island. June 12, 1909. Length 230 mm.

7868. Cagayan, Jolo. January 8, 1909. Length 323 mm.

4924. Casayoran, Malhian Island. July 27, 1909. Length 203 mm.

5425. Cebu market. April 7, 1908. Length 178 mm.

22136 [1907]. Cebu market. September 4, 1909. Length 113 mm.

7536, 7541, 7585. Endeavor Strait, Malapangay Sound, Palawan. December 23, 1908. Length 240 to 315 mm. 75⁴¹~~36~~ Smoky purple with bronzed spots and black shoulder blotch size of eye, but without golden blotch in dorsal axil. 7536 Dark, speckled with white and black shoulder blotch larger than eye.

14496 and 15524. Lingao Point, Luzon. June 24, 1909. Length 185 to 198 mm.

Sebastopygus Jordan and Evermann,
Proc. Cal. Acad. Sci., ser. 4, vol. 16,
p. 506, April 27, 1927. (Type
Sebastodes ruberrimus Cramer,
orthotypic.)

Sebastocarus Jordan and Evermann,
op. cit., ser. 4, vol. 16, p. 507, April 27,
1927. (Type Sebastichthys serviceps
Jordan and Gilbert, orthotypic.)

1315

with age 6 or 7. Also on trunk and tail spots greatly larger and fewer in young. Iris pale yellowish or gray-white. No suprascapula. Dusky blotch equal or little larger than eye and with pale border, though body spots extend within its confines. Vertical fin largely dusky with age though thickly spotted with brown and most distinct in young examples. Pectoral pale or olivaceous. Ventrals grayish, with about 4 rows of dark blotches in young and clouded dusky, especially terminally, with age.

Bombon, Seychelles, Malabar, Philippines.

Possibly Amphacanthus mertensii Valenciennes

Hist. Nat. Poiss., vol. 10, 1835, p. ¹³⁰110, No locality
(on figure by M. Mertens), - Kner, Rep. Novara,
Fischer, 1866, p. 206 (Java). -----

is this species, which it is described as approaching in its small head. The brief original notice is condensed as follows:

Eosebastes Jordan and Evermann, op. cit.,
p. 430. (Type Sebastichthys aurora
Gilbert, designated by Jordan,
op. cit..)

Hispanicus Jordan and Evermann, op. cit.,
p. 431. (Type Sebastichthys rubrivinctus
Jordan and Gilbert, designated by
Jordan, op. cit..)

Emmelas Jordan and Evermann, Bull.
U.S. Nat. Mus., no. 47, pt. 1, pp. 1765,
1896. (Type Sebastes glaucus Hilgendorf,
monotypic.)

Zalophus Jordan and Evermann, op. cit.,
p. 1775. (Type Sebastichthys auctumna
Jordan and Evermann. Designated
informally by Jordan, Evermann and
Clark, Bull. U.S. Comm. Fish.
Append., pt. 2, p. 665, 1905-1906.)

1317
13731. Alimango Bay, Burias Island.
March 5, 1909. Length 200 mm.

331. Atulayan Island. June 18, 1909.
Length 190 mm.

9490. Balalo Bay, Palawan Island.
December 21, 1908. Length 218 mm.

6509. Balikias Bay. July 17, 1908.
Length 292 mm.

16275 and 21860. Biri Channel. June 1, 1909.
Length 153 to 225 mm.

16870. Bisueay Island. April 9, 1909.
Length 165 mm.

7821, 9356, 11635, 12203. Bugruka, Balabac
Island. January 5, 1909. Length 168 to 285
mm.

16458. Busin Harbor, Burias Island.
April 22, 1908. Length 182 mm.

7843, 15695, 17692. Busin Harbor. March 8,
1909. Length 174 to 202 mm.

566

Body elongately ovoid, compressed. Head large, compressed. Snout short, conic. Eye premedian and elevated in head. Mouth moderate or large, lower jaw projecting or not. Maxillary extends below eye, expanded terminally. Teeth in villiform bands in jaws, on vomer and palatines. Spines above as preocular, supraocular, post-ocular, tympanic, coronal, parietal and nuchal pairs. Suprascapula with 1 to 3 spines. Suborbital stay moderate, usually not reaching preopercle. Gill rakers lanceolate. Pyloric caeca 6 to 11. Vertebrae 27, of which 15 caudal. Scales moderate or small, 35 to 100 in a lateral series. Scales ~~moderate or small~~ Head more or less evenly scaled, without dermal flaps, broadens with age.

567

Dorsal fin continuous, emarginate, with 13 spines, rarely 14 or never 12, rays 12 to 16. Anal spines 3, rays 5 to 9. Caudal slightly rounded, truncate or emarginate. Pectoral well developed, base wide or narrow, lower rays undivided. Ventral with spine and 5 rays. Color varied, often brilliant and mostly red.

Northern temperate shores of the Pacific Ocean. ~~and one known from New Zealand.~~ none Arctic, ^{tropical} or Antarctic. While some are local others are extremely abundant where found, usually frequenting rocky situations. They range from shallow water to depths of 250 fathoms. All are ovoviviparous, bearing great

numbers of small young nearly
a half inch long at the time of
birth. The species are often
distinguished with difficulty,
while the range in variation in
both coloration and structure
is often very great.

568-
570

Analysis of Species

a.¹ Emmelas. Dorsal spines 14; skull thick, with small spines; dull brown; peritoneum black. glaucus.

a.² Dorsal spines 13.

b.¹ Cranial ridges (except parietal) all obsolete; lower jaw well protruded.

c.¹ Promospina. Peritoneum black; lower jaw projecting, with symphyseal knob; A. III, 7.

d.¹ Depth 3 to $3\frac{1}{4}$; maxillary scaly.

e.¹ Pores 35 in lateral line; brownish red, 5 bars above lateral line and 4 about eye. sasakii.

e.² Pores 45 in lateral line; warm brown, mottled darker; fins except pectoral and caudal terminally black. taczanowskii.

e.³ Pores 54 in lateral line; cream brown, lateral line in pale streak; opercle with black blotch. itinus.

e.⁴ Pores 59 in lateral line; uniformly reddish. owstoni.

d.² Depth $2\frac{2}{3}$; pores 30 in lateral line; creamy olive green, orange below; back in pale streak clouded with dusky; fins edged blackish. Steindachneri. ⁵⁷²

c.² Sebastomus. Peritoneum white; color blackish or bronze green.

f.¹ A. III, 8; depth $2\frac{3}{5}$ to $2\frac{3}{4}$; pores 45 to 50 in lateral line. inermis.

f.² A. III, 7; depth $3\frac{1}{5}$; pores 51 in lateral line. gunnari.

b.² Cranial ridges somewhat developed, most present and ending in slender spines; lower jaw protruded.

f.¹ ductamentum. Lower jaw greatly protruded, with symphyseal knob.

f.¹ Second anal spine subequal with third.

h.¹ Peritoneum white.

i.¹ Pores 43 to 51 in lateral line; 5 black saddles on back, all reflected on dorsal bases. joyneri.

i.² Pores 52 or 53 in lateral line; 5 brown blotches on back, diffused on bases of dorsals. thompsoni.

h.² Peritoneum black; pores 30 in lateral line; deep red, inside gill opening black.

f.¹ Teeth in narrow bands in jaws and on palatines; jaws scaly.

h.¹ Pectoral reaches third anal spine base; ventral reaches vent; opercle with dusky tint. matsubarae.

h.² Pectoral not reaching anal; ventral not reaching vent; dusky spot on side of body. iracundus.

f.² Teeth uniserial on sides of jaws and on palatines; pectoral reaches front of anal. flammeus.

g.² Second anal spine longer than third; pores 28 in lateral line; peritoneum dusky; red, clouded or cross shaded brownish. scythropus.

f.² Rosicola. Lower jaw little 574
projecting; scales not large.

l.¹ Pores 40 in lateral line;
scales 60 to 70 in lateral line.

fuscescens.

l.² Pores 34 in lateral line;
scales 60 in lateral line.

tanabae.

Sebastodes glaucus (Hilgendorf),

Sebastes glaucus Hilgendorf, Vitzsb.
Gesell. naturf. Freunde Berlin,
p. 170, 1880 (type locality, Yezo).

Sebastodes glaucus Jordan and Gilbert,
Rep. Fur Seal Investig., vol. 3,
p. 447, 1898 (Bering Island). —
Jordan and Evermann, Bull. U.S.
Nat. Mus., no. 47, pt. 2, p. 1777, 1898
(copied). — Jordan and Snyder,
Annot. Zool. Japon., vol. 3, p. 97,
1901 (reference). — Jordan and
Starks, Proc. U.S. Nat. Mus.,
vol. 27, p. 97, 1904 (Bering Island).

1221

Naso vomer (Klunzinger).

Nasus vomer Klunzinger, Verh. Zool.
bot. Ges. Wien, band 21, 1871, p. 514.

Red Sea.

Nasus (Asprismus) vomer Klunzinger,
Fisch. Roth. Meer., 1884, p. 87, plate
13, fig. 2 (type).

576

Depth $2\frac{3}{4}$; head $3\frac{1}{3}$. Eye $4\frac{2}{3}$ in head, $1\frac{1}{5}$ in snout; interorbital $3\frac{2}{5}$ in head; jaws even; vomerine and palatine patches of teeth extremely narrow; Gill rakers $11 + 29$, very long, slender, 1 or 2 lower tubercular; longest over $\frac{2}{3}$ of orbit.

Nasal spines low, strong; ocular ridge low, evident only above front of eye; front edge of preorbital with 2 rounded lobes, spineless; top of head otherwise without spines, ridges or furrows, its even convex curve unbroken; preopercular spines very strong, upper 2 close set, others widely separated, all sharply pointed, uppermost very wide at base, second much narrower, others short and wide; opercular spines strong, flat,

often bifid or trifid.

Lateral line with 56 pores. Scales weakly stenoid, largely covered by greatly developed accessory scales. Breast, belly and prepectoral area smooth. Naked skin covering bones of head minutely wrinkled or papillose. Soft dorsal and anal with narrow bands of scales following rays nearly to tips. Caudal scaled to tip on membranes and rays. Pectoral scaled on basal half.

D. XIV, 16, highest spine $2\frac{1}{3}$ in head, longest soft ray $1\frac{9}{10}$; A. III, 8, spines graduated; caudal very slightly emarginate; pectoral rays 10, IX, scarcely reach vent; ventral $1\frac{1}{2}$ in head, not reaching vent.

Light brownish on body and

578
fins, darker shades on lips, gill
membranes, opercles and top of
head (possibly reddish in life).
Mouth and gill cavity white.
Peritoneum jet black. Length
490 mm. (Jordan and Starks.)
Northern Japan, Bering Island.

579

Sebastodes sasakii Tanaka

Sebastodes sasakii Tanaka,
Zool. Magazine, vol. 28, p. 257,
no. 333, 1917. (type locality,
Matsushima, Rikuzen).

Sebastodes (Primospina) sasakii
Jordan and Hubbs, Mem. Carnegie
Mus., vol. 10, no. 2, p. 260, June
27, 1925 (translation from Tanaka).

Depth 3, elongate, evenly rounded;
 head $2\frac{9}{10}$. Snout $3\frac{1}{5}$ in head;
 eye $4\frac{1}{2}$; maxillary not reaching
 front of pupil, length $2\frac{1}{10}$ in
 head; interorbital $1\frac{1}{2}$. Gill
 rakers 20, longest $1\frac{1}{2}$ in eye.

Scales 115 in lateral line;
 pores 57 in lateral line; 15
 scales above, 27 below. Scales
 ctenoid. Maxillary scaled.

D. XIII, 15; A. III, 7; caudal
 emarginate; depth of caudal
 peduncle 4 in head; pectoral
 reaches beyond ventral but not
 to anus, equals ventral, rays
I, 8, IX; ventral rays I, 5.

Brownish red, pale ventrally.
 Irregular brownish blotches on
 sides; 5 wide bars above lateral
 line, and many irregular spots
 between bars. Four brownish
 bands about eye, 1 band across

581
head in front of eyes, 1 branched
band behind eye, one branch
extending across head back of
eye, the other branch running
along side of body; next
band below eye also branched,
1 branch running to opercle, 1
branch extending obliquely
downward and backward;
last band extending downward
and forward from eye. Another
band on interorbital space,
not touching eye. Very little
black on lower part of opercles.
Belly pale. (Jordan and Hubbs.)
Japan. Size not given.

Sebastodes taczanowskii (Steindachner)

Sebastes taczanowskii Steindachner,

Sitzs. Ber. Akad. Wiss. Wien, vol.
82, pt. 1, p. 256, pl. 2, fig. 1, 1880

(type locality, "Buchten Majen,
Sydjien, Rasbojnik and Abrek,
h. Japan" [Bays of Gulf of
Strielok near Vladivostok, Japan
Sea]).

spots on caudal peduncle. Light blue¹²⁰⁹
along back. at base of dorsal. Dorsal
jet black, color gradually shallower
until at last rays involving half of
fin, anteriorly extending entire depth;
median narrow gray line, terminal
zone buff and very narrow black edge.
Anal olive at base, then broad poppy
red band which dusky basally and
narrow dark blue marginal line,
also with very narrow marginal line
of pale blue. Caudal black, with
submarginal rich olive crescent and
white marginal zone. Pectoral black,
with large central olive green areas.
Ventral rays olive, membranes
blackish.

Sebastodes taczanowskii Jordan
and Evermann, Bull. U. S. Nat. Mus.,
no. 47, pt. 2, p. 1831, 1898 (reference).
— Jordan and Gilbert, Rep. Fur
Seal Investig., vol. 3, p. , 1898
(Shana Bay, Iturup Island). —
Jordan and Snyder, Annot. Zool.
Japon., vol. 3, p. 98, 1901 (reference).
— Jordan and Starks, Proc. U. S.
Nat. Mus., vol. 27, p. 98, 1904
(Otaru, Mororan, Iwanai, Nemori,
Ume). — Izuka and Matsuura, Cat.
Zool. Spec. Mus. Tokyo, Vertebr., p.
130, 1920 (Hokkaido).

border, upper more brilliant and lower or anal border broader. Caudal brown like body, hind edge whitish. Paired fins largely dull brown or with olivaceous tinge on pectoral.

East Africa, Mauritius, ^{Micronesia}
Red Sea, East Indies, Philippines, Melanesia, Polynesia, Hawaii.

A very well marked species, easily distinguished by the absence of a frontal horn or hump and its variegated or rather brilliant colors.

8119 and 16067. Alimango Bay, Burias Island. March 5, 1909. Length 157 to 368 mm.

8633. Biri Channel. June 1, 1909. Length 237 mm.

8725. Caracaran, Batan Island. June 8, 1909. Length 264 mm.

5377. Cebu market. April 5, 1908. Length 157 mm. Body and head dull blackish green, lighter on belly. Area of oil green over and behind eye. Lips dull carmine. Two round orange

Sebastodes (Sebastomus) taczanowski

Jordan and Hubbs, Mem. Carnegie
Mus., vol. 10, no. 2, p. 267, June 27,
1925 (Otaru; Sapporo).

Scales 55 to 57 + 5 or 6 close along and above lateral line; 36 to 38 + 2 tubular scales in lateral line; 11 scales above lateral line, 19 below, 35 predorsal scales forward to nostrils. Maxillary with very small, crowded scales. Fins covered with small scales basally. Scales with 10 or 11 basal radiating striae; 22 to 25 slender apical denticles, with 1 or 2 transverse series of basal elements; circuli fine, coarse apically.

D. XIII, 13, I or 14, I, fourth spine $2\frac{1}{2}$ to $2\frac{2}{3}$ in total head length, third ray 2 to $2\frac{3}{5}$; A. III, 7, I, second spine 2 to $2\frac{1}{3}$, second ray $1\frac{7}{8}$ to 2; caudal $1\frac{2}{3}$ to $1\frac{3}{4}$, truncate; least depth of caudal peduncle $3\frac{1}{5}$ to $3\frac{1}{2}$;

Depth $2\frac{4}{5}$ to $3\frac{1}{4}$; head $2\frac{7}{8}$ to 3, width $2\frac{1}{6}$ to $2\frac{1}{5}$. Snout $3\frac{3}{4}$ to $3\frac{4}{5}$ in head from snout tip; eye 4 to $4\frac{1}{5}$, 1 to $1\frac{1}{10}$ in snout, greater than eye in young to subequal with age; maxillary reaches $\frac{1}{2}$ to $\frac{3}{4}$ in eye, expansion $1\frac{3}{4}$ to $1\frac{4}{5}$ in eye, length 2 to $2\frac{1}{5}$ in head from snout tip; teeth villiform, in narrow bands in jaws, on vomer and palatines; interorbital $4\frac{1}{8}$ to $4\frac{1}{3}$, low, broadly convex. Pair of small nasal spines; small, low, antero-supraorbital spine and similar postero-supraorbital spine; strong suprascapular spine; 2 obsolete, preorbital spines, very blunt, broad and short; 5 small preopercular spines; 2 opercular spines, upper little posterior.

587

pectoral $1\frac{1}{4}$ to $1\frac{1}{3}$, rays I, 6, VIII
or I, 7, VII; ventral rays I, 5,
fin $1\frac{3}{5}$ to $1\frac{2}{3}$ in total head
length.

Largely uniform brown,
scarcely paler below. Iris
gray brown. Fins often dark
brown or inclining to gray
brown terminally.

North Pacific in Alaska,
Siberia and Japan. A plain
colored species with the spines of
the head inconspicuous.

U. S. N. M., no. 44887. Japan.
Government of Japan. Length
215 to 223 mm. Two examples.

U. S. N. M., no. 48141. Hakso,
Japan. S. Hozawa. Length 241 mm.

U. S. N. M., no. 51283. Japan.
D. S. Jordan and J. Q. Snyder.
Length 112 to 123 mm. Two examples.

U. S. N. M., no. 51306. Tokyo.
D. S. Jordan and J. Q. Snyder.
Length 227 mm.

U. S. N. M., no. 51360. Mororan,
Japan. D. S. Jordan and J. Q.
Snyder. Length 34 to 62 mm.
51 examples.

U. S. N. M., no. 71799. Hakodate,
Japan. Albatross Collection 1906.
Length 125 to 184 mm. Five
examples.

Sebastodes itinus Jordan and Starck

Sebastodes itinus Jordan and Starck,
Proc. U. S. Nat. Mus., vol. 27, p. 99, fig.
1, 1904 (type locality, Hakodate,
Japan).

Lenthis margaritifera (non Valenciennes)

Playfair, Proc. Zool. Soc. London, 1867, p.

855 (Seychelles).

Depth $3 \frac{1}{6}$; head 3, width 2.
Snout $3 \frac{3}{5}$ in head from snout tip; eye $4 \frac{1}{3}$, $1 \frac{1}{5}$ in snout, $1 \frac{1}{6}$ in interorbital; maxillary reaches $\frac{2}{3}$ in eye, expansion $1 \frac{3}{5}$ in eye, length $2 \frac{1}{10}$ in head from snout tip; teeth finely villiform, in bands in jaws, on vomer and palatines, interorbital 4, low, broadly convex. Gill rakers $13 + 30$, slender, lanceolate, $1 \frac{1}{3}$ in eye; gill filaments $\frac{3}{4}$ of gill rakers. Pair of very small nuchal spines; supraorbital and occipital spines not distinct; small suprascapular spine; preorbital spines not developed other than 2 broad, short lobes; 5 small preopercular spines; 2 subequal operculars, upper slightly larger.

591

Scales 80 close along and above lateral line to caudal base; tubular scales 63 in lateral line to caudal base; 17 scales above, 22 below, 68 predorsal forward to upper lip; 14 + 5 scales in oblique row across cheeks; maxillary covered with very small, fine scales; mandible finely scaled; fins with fine scales basally. Scales with 7 or 8 basal radiating striae; 22 to 32 slender, apical denticles, with 4 or 5 transverse series of basal elements; ceculi fine.

D. XIII, 14, I, fourth spine $2\frac{2}{3}$ in total head length, second ray $2\frac{1}{2}$; A. III, 7, I, third spine 4, second ray $2\frac{3}{5}$; caudal $1\frac{2}{3}$, emarginate behind; least

592

depth of caudal peduncle 4;
pectoral $1\frac{1}{3}$, rays I, 8, VIII;
ventral rays I, 5, fin 2 in
total head length.

Brown, back variegated
with obscure darker cloudings,
lower surfaces immaculate.
Dark brown horizontal bar on
opercle above. Several
indistinct dark lines radiate
from eye behind and below.
Iris pale brownish. Fins
brown, spinous dorsal with
membranes gray black terminally
and soft fin dark brown
basally, pale marginally. Hind
caudal edge pale, rest of fin
with broad area with indistinct
brown spots in about 4 or 5
transverse rows. Anal pale
brown basally. Pectoral brown,
with some obscure dark brown

spots. Ventral brownish.

593

Japan. Known by its very fine close set scales.

U. S. N. M., No. 71796. Hakodate,
Japan. Albatross Collection 1906.
Length 257 mm.

Sebastodes owstoni Jordan
and Thompson

Sebastodes owstoni Jordan and
Thompson, Mem. Carnegie Mus.,
vol. 6, no. 4, p. 270, pl. 31, fig. 3,
Sep. 1914 (type locality, Comori,
Japan).

Sebastodes (Primosпина) owstoni
Jordan and Hubbs, Mem. Carnegie
Mus., vol. 10, no. 2, p. 260, June 27,
1925 (Yokawa; no). — Schmidt,
Trans. Pac. Comm. Acad. Sci.
USSR., vol. 2, p. 94, 1931 (Tokyo).

595

Depth $3\frac{1}{2}$; head $2\frac{7}{8}$. Snout $3\frac{1}{2}$ in head from snout tip; eye $3\frac{1}{3}$, greater than snout or interorbital; maxillary reaches $\frac{1}{2}$ in eye, expansion 2, length $2\frac{1}{3}$ in head from snout tip; narrow band of teeth in upper jaw, single series in mandible with patch on symphyseal knob; interorbital $4\frac{1}{2}$, low, broad, slightly convex. Nasal spines small, sharp; preocular spines moderate, sharp; orbital rim not raised; supra-orbital and parietal ridges visible, not covered by scales, each ending in very small, sharp spine, as does nuchal ridge; preorbital with single, sharp serration on lower border; 5 flat preopercle spines.

Scales 55 to 60 in lateral line; pores 35 in lateral line; 6 scales above; 16 below;

6 rows of scales on cheeks to ⁵⁹⁶
preopercle ridge. Head nearly
completely scaled. Small scales
on bases of fins. Lateral line
complete, little arched or high
at first, axial.

D. XIV, 13, I or 14, I, fourth
spine $2\frac{1}{5}$ in total head length,
second ray $2\frac{1}{3}$; A. III, 8, I or 9, I,
third spine $2\frac{1}{3}$, third ray 2;
caudal $1\frac{3}{5}$, emarginate behind;
least depth of caudal peduncle
4; pectoral $1\frac{1}{8}$, rays I, 7, VIII;
ventral rays I, 5, fin $1\frac{2}{3}$ in
total head length.

Uniformly reddish. Sometimes
faint indications of blackish blotch
below ninth to twelfth dorsal
spines and another below middle
of soft dorsal. Length 178 mm.
(Jordan and Thompson.)
Japan.

Sebastodes steindachneri (Hilgendorf)

Sebastes steindachneri Hilgendorf,
Sitzsb. Gesell. Naturf. Freunde
Berlin, p. 172, pl., 1880 (type
locality, Yezo).

Sebastodes steindachneri Jordan and
Evermann, Bull. U. S. Nat. Mus., no. 47,
pt. 2, p. 1830, 1898 (copied). —
Jordan and Snyder, Annot. Zool.
Japan., vol. 3, p. 98, 1901 (reference).
— Jordan and Starks, Proc. U. S.
Nat. Mus., vol. 27, p. 100, 1904
(Hakodate). — Tanaka, Fig.
Descript. Fishes of Japan, nos. 39-
41, p. 781, pl. 169, fig. 469, 1927.

half of soft dorsal white or hyaline, ^{12/12}
running somewhat into spinous, whole
fin very narrowly margined with dark.
Anal and caudal spines orange at
base. Anal with narrow dark edge and
dark base. Caudal like body color,
with white tip and yellowish bar below,
divided by dark again and forked.
Paired fins more or less brassy.

26812 U.S.N.M. Johnston Island.

Length 300 mm. to end of caudal filament.

52450 U.S.N.M. Apia, Samoa.

Bureau of Fisheries. Length 70 to 258
mm. 4 examples.

52694 U.S.N.M. Hawaiian Islands.

Length 355 mm.

Sebastodes (Sebastomus) steindachneri Jordan and Hubbs, Mem. Carnegie Mus., vol. 10, No. 2, p. 267, June 27, 1925 (Remurc).

Depth $2\frac{2}{3}$; head $2\frac{5}{6}$. Snout 4 in head; eye 4; maxillary reaches hind edge of orbit; mouth large, lower jaw strongly projecting, knob at symphysis; teeth rather coarse, in narrow bands, ~~is~~ developed in knob at front of mandible; interorbital $4\frac{1}{2}$ in head, slightly and evenly convex, supraorbital rim not raised. Gill rakers long, slender, $\frac{3}{5}$ of eye.

~~Lateral line with 30 pores.~~
~~Scales everywhere strongly ctenoid.~~

599
No spines on top of head, except nasal. Ridges absent except at occiput, where but very slightly evident. Preopercle spines blunt-pointing backward, next to upper and largest. Preorbital with 2 obtuse spines.

Lateral line with 30 pores. Scales everywhere strongly ctenoid. Mandibles naked. Maxillary and preorbital with fine scales.

D. XIII, 14, spines rather low, fourth to eighth subequal or $2\frac{2}{5}$ in head, soft fin little higher than spinous fin; A. III, 7, second spine stouter and longer or little longer than third or $2\frac{1}{3}$ to $2\frac{1}{2}$ in head; caudal slightly concave; pectoral rays 9, IX, rather broad and rounded, reaches past ventral tips to vent or front of anal; ventral spine $\frac{3}{5}$ of soft rays, not reaching vent.

600

When fresh light olive green,
verging on golden below and
orange tinged on breast. Dull
orange stripes radiate from
eye. Jaw fleshy pink, lips
golden and maxillary with
yellow streaks. Dark olive clouds
on back body. Lateral line pink.
Dorsal clouded olive, pinkish
at tip with blackish edging.
Anal spines pink, rays bright
olive yellow. Caudal bright
olive, pinkish above and below.
Pectoral pink, yellow olive at
base. Ventral yellow olive,
with pink on first rays and
blackish at tip. Length 240 mm.
(Jordan and Starck.)

Japan.

Sebastodes inermis (Cuvier)

Sebastes inermis Cuvier, Hist. Nat. Poiss., vol. 4, p. 346, 1829 (type locality, Japan). — Günther, Cat. Fish. Brit. Mus., vol. 2, p. 97, 1860 (Japan). — Hilgendorf, Sitzb. Gesell. Naturf. Freunde Berlin, p. 172, 1880.

— Steindachner and Döderlein, Denks. Akad. Wiss. Wien, math.-naturw. Kl., vol. , p. 205, 1884 (Tokyo).

1204

A1460. Kait Point, Libani Bay, Celebes.

December 29, 1909. Length 446 mm.

A904. Limbe Strait, Celebes. November

10, 1909. Length 315 mm.

A1551. Nan Wan, Formosa, January

25, 1910. Length 230 mm.

65721 U.S.N.M. Rongiroa. Albatross
Collection. Length 378 mm. to hind
caudal edge.

Sebastodes inermis Jordan and
Evermann, Bull. U. S. Nat. Mus., no.
 47, pt. 2, p. 1829, 1898 (copied). —

Jordan and Snyder, Annotat. Zool.
 Japon., vol. 3, p. 97, 1901 (reference).

— Jordan and Starks, Proc. U. S. Nat.
 Mus., vol. 27, p. 103, 1904 (Habodate,
 Matsushima, Tokyo, Misaki, Inoshima,
 Kobe, Anomichi, Hiroshima, Mikunoura,
 Nagasaki, Tsushima). — Tanaka,

Journ. Fac. Sci. Univ. Tokyo, vol.
 3, pt. 1, p. 35, Nov. 4, 1931 (reference).

(— Izuka and Matsumura, Cat. Zool. Spec.
 Mus. Tokyo, Vertebr., p. 130, 1920 (Tokyo
 market).)

— Jordan and Thompson, Mem. Carnegie Mus.,
 vol. 6, no. 4, p. 271, Sep. 1914 (Asaka).

— Snyder, Proc. U. S. Nat. Mus., vol. 42, p. 425,
 1912 (Otaru; Misaki; Aisawa; Shiogama).

— Jordan and Loetz, Mem. Carnegie Mus., 6, p. 51, 1913
 (Fusan).

1203

Lips purple. Side of head with scattered dots same as body. Iris dark. Dorsals dark purplish olive, edged blue. Anal like soft dorsal, marginal bands somewhat broader and with dash of purple at bases of membranes. Caudal dark olive green, with purplish shades; caudal peduncle at base bright purple, edges of fin lobes and produced rays dull purple; yellowish green blotches under produced rays near outer angles of fin. Pectoral slaty, with dashes of brilliant purple on rays. Ventral dark yellowish green.

16469. Ternabal Island. September

18, 1909. Length 168 mm.

Sebastodes (Sebastomus) inermis

[Jordan and Hubbs, Mem. Carnegie Mus., vol. 10, no. 2, p. 261, June 27, 1925
(Tokyo; Yokohama; Toba; Misaki;
Mikawa Bay). — Schmidt, Trans.
Pac. Comm. Acad. Sci. U.S.N.R., vol.
2, p. 95, 1931 (Nagasaki; Tokio).

Vebastes ventricosus Schlegel, Fauna
Japonica, Poiss., pts. 2-4, p. 48, pl.
20, figs. 1-2, 1843 (type locality,
Japan [= Nagasaki]). — Bleeker,
Verh. Batavia. Genoot. (Nal. Ichth.
Japan), vol. 25, p. 12, 1853 (reference);
(Nal. Ichth. Japan), vol. 26, pp. 5, 80,
1857 (Nagasaki); Act. Soc. Sci.
Ind. Neerl., vol. 3, no. 3, p. 5, 1857-
58 (Japan).

9796. Caxisigan Island, off Balabac. January 2, 1909. Length 137 mm.

9252. Endeavor Strait. December 22, 1908. Length 223 mm.

21535. Endeavor Strait. December 23, 1908. Length 117 mm.

9724. Kayoa Island. November 29, 1909. Length 167 mm.

5020. Lagoon South Sumindao. February 26, 1908. Length 205 mm. Dusky cadmium, front part of body, breast and head mainly black. Paler median stripe through top of head from front of dorsal, washed with yellow. From upper preopercle edge across head below, including region between breast and chin; olive gray peppered with small large blotch below middle of pectoral. Another purplish stripe, $\frac{2}{3}$ width of eye, begins below eye, extends from front of eye to projected snout.

— Günther, Cat. Fish. Brit. Mus.,
vol. 2, p. 97, 1860 (Japan). —

Nyström, Bih. K. Svensk. Vet.
Akad. Handl. Stockholm, vol. 13,
af. 4, no. 4, p. 20, 1887 (Nagasaki).

Sebastodes ventricosus Jordan and
Evermann, Bull. U.S. Nat. Mus., no.
47, pt. 2, p. 1829, 1898 (copied).

4958, 4967, 19831. Tatan Island,
Tawi Tawi Group. February 20 and 21,
1908. Length 182 to 460 mm. General
color purplish slate, above marked
with many rounded purple dots
about size of 9 or 10 shot; on middle
of sides dots fuse as vertical wavy
lines, break into dots on upper part
of breast and abdominal region,
become extremely minute and then
disappear. From shoulder around gill
opening purplish, breaking into clouded
on back.

2. Examples without black blotch

Sebastes fuscescens not Houttuyn
Jordan and Snyder, Proc. U. S. Nat.
 Mus., vol. 23, p. (746) 756, 1900
 (Tsushima).

Sebastes guntheri Jordan and
Starks, Proc. U. S. Nat. Mus., vol. 27,
 p. 102, fig. 2, 1904 (type locality,
 Wakanoura; Misaki; Hakodate
Sebastes guntheri Jordan and Metz, Mem. Carnegie Mus.,
 vol. 6, no. 1, p. 49, June 1913 (Chinampo).

Sebastes ^{fig. 3} tokionis Jordan and
Starks, Proc. U. S. Nat. Mus., vol. 27,
 p. 104, fig. 3, 1904 (type locality,
 Misaki; Tokyo; Wakanoura;
 Tsunaga). — Jordan and Thompson,
 Mem. Carnegie Mus., vol. 6, no. 4, p.
 271, Sep. 1914 (Misaki).
 — Franz, Abhandl. Bayer. Akad. Wiss., vol. 1,
 Suppl. Band 4, p. 70, 1910.

1201

6062. Little Santa Cruz Island.
May 28, 1908. Length 275 mm.

9343 and 9344. Murciélagos Bay,
Mindanao. August 21, 1909. Length
208 to 315 mm. Three examples.

8390 to 8392. Port Dupon, Leyte.
March 17, 1909. Length 300 to 474 mm.

14683. ~~San Juan~~ ^{Lingao} Point, Luzon. June 24,
1909. Length 144 mm.

19548. Simalue Island. September
22, 1909. Length 168 mm. [1988.]

A741 and A742. Sipadan Island.
September 28, 1909. Length 525 to 540 mm.

A952. Sadaa Island. November 17, 1909.
Length 420 mm.

A612. ~~Singuan~~ ^{Sin} Island. September 21,
1909. Length 225 mm.

— Imyden, Proc. U. S. Nat. Mus.
vol. 42, p. 425, 1912 (Tokyo market).

Sebastodes (Sebastomus) tokionis
Jordan and Hubbs, Mem. Carnegie
Mus., vol. 10, no. 2, p. 263, June 27,
1925 (Osaka; Misaki; Toba). —

Schmidt, Trans. Pac. Comm. Acad.
Sci. U.S.A., vol. 2, p. 95, 1931
(Nagasaki; Misaki; Tokyo; Fusan).

608

Depth $2\frac{1}{2}$ to $2\frac{3}{4}$; head $2\frac{1}{2}$ to $2\frac{3}{4}$, width 2 to $2\frac{1}{2}$. Snout $3\frac{7}{8}$ to 4 in head from snout tip; eye $3\frac{1}{3}$ to $3\frac{1}{2}$, greater than snout or interorbital; maxillary reaches $\frac{2}{5}$ to $\frac{3}{4}$ in eye, expansion $\frac{14}{5}$ to 2 in eye, length $2\frac{1}{8}$ to $2\frac{1}{4}$ in head from snout tip; teeth minutely villiform, in broad bands in jaws, on vomer and palatines; interorbital $3\frac{7}{8}$ to $4\frac{3}{4}$, low, slightly concave to level. Gill rakers $9 + 23$, slender, lanceolate, $1\frac{7}{8}$ in eye; gill filaments $\frac{4}{5}$ of gill rakers. Pair of small nasal spines; small antero-supraorbital spine followed by long keel to larger postero-supraorbital, in young still posterior followed by small spine; pair of small,

609

wide set occipitals; 2 broad, diverging, short spines on lower preorbital edge; 5 preopercular spines, second from above much largest or $3\frac{1}{4}$ in eye; broad suprascapular spine, preceded above by spine; 2 opercular spines, upper larger and little posterior.

Scales 56 or 57 + 4 or 5 close above along lateral line; 34 or 35 + 1 or 2 tubular scales in lateral line; 12 or 13 above, 16 or 17 below, 14 predorsal forward to occipital spines and 32 forward opposite nostrils; 9 or 10 scales obliquely from lower eye edge to angle of preopercle ridge. Maxillary largely with very small scales. Bases of fins with small scales. Scales with 9 to 15 basal

610

radiating striae; 50 to 54 short apical denticles, with 5 to 8 transverse series of basal elements; circuli very fine.

D. XIII, 12 or 13, fourth spine $2\frac{2}{5}$ to $2\frac{1}{2}$ in total head length, fourth ray $2\frac{1}{3}$ to $2\frac{1}{2}$; A. III, 8, I, second spine $2\frac{4}{5}$ to 3, third ray $1\frac{3}{4}$ to $2\frac{1}{4}$; caudal $1\frac{3}{5}$ to $1\frac{2}{3}$, convex behind; least depth of caudal peduncle $3\frac{1}{10}$ to $3\frac{7}{8}$; pectoral $1\frac{1}{8}$ to $1\frac{3}{5}$, rays I, 6, VIII; ventral rays I, 5, length $1\frac{1}{2}$ to $1\frac{3}{5}$ in total head length.

Brown generally, but little paler on under surfaces. Six dark transverse bands on back and sides above, made up of blotches or dark mottling with age; in young more compact and contrasted, also extend on vertical fins.

Japan.

611

U. S. N. M., No. 50904. Japan.

D. S. Jordan and J. O. Snyder.
Length 168 mm. As Sebastes
guntheri.

U. S. N. M., No. 51237. Japan.

D. S. Jordan and J. O. Snyder.
Length 130 to 228 mm. Three
examples.

U. S. N. M., No. 45273. Isumima
Island, Japan. P. L. Jouy. Length
133 mm.

U. S. N. M., No. 51257. Japan.

Albatross Collection. Length 118 to
135 mm. Two examples.

U. S. N. M., No. 51258. Japan.

D. S. Jordan and J. O. Snyder.
Length 50 to 136 mm. Three examples.
Greatly variegated, with dark
brown spots, producing a mottled
appearance on back and more
coarsely reticulated on lower

surface of head and body.
 Fins all more or less spotted
 with blackish brown.

U. S. N. M., No. 51332. Japan.

D. S. Jordan and J. O. Snyder.
 Length 65 to 77 mm. Four
 examples.

U. S. N. M., No. 51339. Wakanoura.

D. S. Jordan and J. O. Snyder.
 Length 74 mm. U. III, 7, I. Pectoral
 reaches anal, extends little beyond
 ventral. As Sebastodes tokiensis.

U. S. N. M., No. 57774. Japan.

P. L. Jouy. Length 148 mm.

U. S. N. M., No. 57775. Japan.

P. L. Jouy. Length 160 mm.

U. S. N. M., No. 71592. Shiogama,

Rikuzen, Japan. Albatross Collection
 1906. Length 54 to 86 mm. Seven examples.

U. S. N. M., No. 71620. Misaki.

Albatross Collection. Length 46 to
 228 mm. 26 examples.

U. S. N. M., no. 71745. Aikawa,⁶¹³
Rikuzen, Japan. Albatross Collection
1906. Length 42 to 163 mm.
33 examples.

U. S. N. M., no. 71785. Tokyo
market. Albatross Collection.
J. Q. Snyder and K. Otake. Length
73 to 188 mm. 21 examples. As
Sebastes tokiensis. Like no.
50904 these all have long ventrals
reaching beyond the vent or
nearly, or quite, to anal. D.

XIII, 8, I.

U. S. N. M., no. 71802. Misaki.
Albatross Collection 1906. Length
39 to 166 mm. 27 examples.

U. S. N. M., no. 91839. Hakodate.
Albatross Collection. Length 78 mm.
A. III, 7, I. As Sebastes tokiensis.

Sebastodes gunnari Rendahl

Sebastodes gunnari Rendahl, Arkiv
Zool. Stockholm, vol. 16, no. 2, p.
32, 1924 (type locality, Chihli;
Tien-Tsin-Hsien; Ta-Ku).

Depth $3\frac{1}{5}$; head $2\frac{2}{3}$. Snout $4\frac{1}{3}$
in head; eye $3\frac{3}{5}$; interorbital 5,
concave. Gill rakers 7 + 17, slender,
 $2\frac{1}{10}$ in eye. Nasal, preorbital,
supraorbital and 2 pairs of
parietal spines developed; 3
preorbital spines; 5 preopercular,
2 opercular; 2 humeral.

Pores 51 in lateral line.

D. XIII, 13; A. III, 7.

1220

and yellow blotch with purplish
on base. Caudal like lower side,
shows purplish after fading with
dusky tip. Pectoral dark slate.
Ventral like adjacent region of
body.

5937. Zamboanga. May 25, 1908.
Length 355 mm.

A 902 and A 1200. Dourra Island,
Dutch East Indies. December 2, 1909.
Length 342 to 346 mm.

A 902. Limbe Strait, Celebes.
November 10, 1909. Length 445 mm.

~~30545 U.S.N.M. New Guinea, Australian Museum. Length 308 mm.~~
3076 U.S.N.M. Honolulu, Dr. D. P.

Jenkinson. Length ~~mm~~. Type of
Callicanthus metoposiphon. ~~Callicanthus~~

615

Pale brown, marbled with dark brown. Five obsolete dark cross bars. Two dark streaks from hind edge of eye to preopercle. Upper jaw with dark longitudinal streak. Dorsal dark brown, darker blotches basally. Anal and ventral dark, but with pale edge. Caudal pale, with 3 transverse rows of dark spots on the rays, of which subterminal row largest and most pronounced. Pectoral pale, with brown spots on rays as irregular transverse series. Length 67 mm. without caudal. (Rendahl.)

China.

Sebastodes joyneri (Günther)

Sebastes joyneri Günther, Ann. Mag. Nat. Hist. London, ser. 5, vol. 1, p. 485, 1878 (type locality, Токеи, Japan); ~~for~~ Rep. Voy. Challenger, vol. 1, pt. 6, p. 64, pl. 29, fig. A, 1880 (types from "south east coast of Ниппон"). — Steindachner and Döderlein, Denks. Akad. Wiss. Wien, math.-naturw. Kl., vol. 1, p. 206, 1884.

Sebastodes joyneri Jordan and Evermann, Bull. U. S. Nat. Mus., No. 47, pt. 2, p. 1829, 1898 (copied). — Jordan Proc. U. S. Nat. Mus., vol. 23, p. 757, 1900; and Nyder, Annot. Zool. Japon., vol. 3, p. 97, 1901 (Yokohama). —

Jordan and Starks, Proc. U. S. Nat. Mus., vol. 27, p. 105, 1904 (Aomori, Miyako, Tokyo). — Izuka and Matsuura, Cat. Zool. Spec. Tokyo Mus., Vertebr., p. 130, 1920 (Tokyo market).

Depth $2 \frac{2}{5}$ to $3 \frac{1}{8}$; head $3 \frac{3}{5}$ to $3 \frac{3}{4}$, width 2 to $2 \frac{1}{5}$. Snout $1 \frac{1}{3}$ to $1 \frac{2}{5}$; eye $3 \frac{1}{2}$ to 5, $2 \frac{1}{5}$ to $3 \frac{7}{8}$ in snout, 1 to $1 \frac{2}{3}$ in interorbital; teeth 32 to 34, 26 to 28 in young, compressed, ends rounded; maxillary $3 \frac{1}{2}$ to $4 \frac{1}{4}$ in head; interorbital $3 \frac{1}{3}$ to $3 \frac{3}{5}$, broadly convex. Gill rakers $4 + 9$, compressed, short, triangular, short.

Skin finely roughened or asperous, rough velvety to touch; young also finely asperous.

D. VI, 28, 1 or 29, 1, first spine $1 \frac{7}{8}$ to $2 \frac{1}{8}$ in head, first ray $2 \frac{3}{5}$ to $2 \frac{3}{4}$; A. II, 28, 1 to 30, 1, second spine 3 to $3 \frac{1}{2}$, first ray $3 \frac{1}{8}$ to 4; caudal emarginate, in young upper lobe little longer, with age uppermost and lowermost rays end in filament above and below, $1 \frac{2}{3}$ to $3 \frac{2}{3}$ in combined head and body; least depth of caudal peduncle $4 \frac{2}{3}$ to 5 in head; pectoral $1 \frac{2}{5}$ to $1 \frac{1}{2}$; ventral $1 \frac{3}{5}$ to 2; caudal peduncle with 2 bony bucklers, each with compressed, curved, broad, pointed spine directed forward, base of first buckler 5 to 8.

Dull uniform brown, scarcely paler below. Yellow line from lower eye edge forward, then down behind maxillary and upward along lower edge of preopercle. Iris brown, with yellowish ring around pupil. Bucklers pale yellowish. Dorsals and anals neutral blackish, each with buff

42 (617)

— Snyder, Proc. U. S. Nat. Mus., vol. 23, p.
~~1877~~ ~~1878~~ 426, 1912 (Hakodate; Tokyo).

— Jordan and Thompson, Mem.
Carnegie Mus., vol. 6, no. 4, p. 270.
Sep. 1914 (Tushima Straits;
Osaka; Miyako).

Sebastodes (Sebastomus) joyneri
Jordan and Hubbs, Mem. Carnegie Mus.,
vol. 10, no. 2, p. 264, June 27, 1925
(Shizuoka). — Schmidt, Trans. Pac.
Comm. Acad. Sci. U.S.A., vol. 2, p. 95,
1931 (Tokyo; Misaki; Nagasaki).

Sebastes inermis (not Cuvier)

Hilgendorf, Sitzb. Ges. Naturf.

Freunde Berlin, p. 172, pl., 1889

(). — Steindachner,

Denks. Akad. Wiss. Wien, math.-

naturw. Kl., vol. , p. 206, 1884

p. 249 (Flores Island), p. 271 (Atapupu,
Timor).

— Playfair, Fishes of Zanzibar,

1866, p. 58 (Zanzibar and Pemba Island).

— Klunzinger, Verh. zool. bot. Ges. Wien,
band 21, 1871, p. 513 (Koseir, Red Sea). —

Günther, Journ. Mus. Godeffroy, band 4,
1875, p. 124, plate 82 (Red Sea, East Africa,
Hawaii, Society Islands). —

Weber, Siboga
Exped., band 65, 1913, p. 320 (Karkaraling
Island, Gisser, Timor).

— Kner, Reise Novara Fische, 1865, p. 213 (Australia).

basus (Aspisurus) lituratus Klunzinger,
Fische Roth. Meer., 1884, p. 87.

monoceros garretti Seale, Ocean. Pap.

Bishop Mus., vol. 1, no. 3, 1900, p. 112.

Guam.

619
4

Depth $2\frac{3}{4}$ to $2\frac{4}{5}$; head $2\frac{3}{4}$ to $2\frac{1}{8}$, width $2\frac{1}{10}$ to $2\frac{1}{4}$. Snout 4 to $4\frac{1}{4}$ in head from snout tip; eye $3\frac{1}{8}$ to $3\frac{7}{8}$, greater than snout or interorbital; maxillary reaches $\frac{2}{5}$ to $\frac{1}{2}$ in eye, expansion $1\frac{4}{5}$ to 2 in eye, length $2\frac{1}{5}$ to $2\frac{1}{2}$ in head from snout tip; teeth finely villiform, in bands in jaws, on vomer and palatines; interorbital $3\frac{2}{5}$ to $3\frac{4}{5}$, low, slightly convex. Gill rakers $12 + 25$, slender, lanceolate, $1\frac{1}{2}$ in eye; gill filaments $\frac{3}{4}$ of gill rakers. Pair of small nasal spines; 1 low antero-supra-orbital and 1 low postero-supra-orbital spine, also 1 long occipital keel each side ending in a small spine; 1 strong suprascapular spine with 1 advanced and higher spine; 2 small spines on lower

front preorbital edge; 5 preopercular spines, all directed back; 2 long, slender, opercular spines, upper posterior and larger.

Scales 68 to 70 + 6 to 8 close above and along lateral line; 46 or 47 + 1 or 2 tubular scales in lateral line; 17 scales above, 23 below, 60 predorsal forward to upper lip, of which only 20 to 22 forward to occipital spines; 12 + 6 scales obliquely on cheeks. Maxillary with few small scales. Fins with small, crowded, basal scales. Scales with 9 or 10 basal radiating striae; 25 to 35 short, slender, apical denticles, with 2 transverse series of basal elements; circuli fine.

D. XIII, 14, I, third spine $2\frac{1}{4}$ to $2\frac{1}{3}$ in total head length, third ray $2\frac{1}{3}$ to $2\frac{1}{2}$; A. III, 7, I or 8, I,

second spine 2 to $2\frac{2}{3}$, second ray 2 to $2\frac{1}{5}$; caudal $1\frac{2}{5}$ to $1\frac{1}{2}$, convex behind; least depth of caudal peduncle 3 to $3\frac{1}{5}$; pectoral $1\frac{1}{8}$ to $1\frac{1}{6}$, rays I, 8, VIII; ventral rays I, 5, fin $1\frac{2}{5}$ to $1\frac{3}{4}$ in total head length.

Very pale brown, whitish on lower sides and under surfaces. Along upper edge of body or back at bases of dorsals to dark brown, contrasted blotches, only first 3 extend but little below lateral line and all reflected on bases of dorsal fins. Iris pale or whitish. Fins, except as notes, all pale, lower ones whitish.

Japan. A handsome contrasted species, easily known by its pointed protruding mandible and black

dorsal saddle-like blotches.

622

U. S. N. M., no. 48144. Hakodate,
Japan. V. Kozawa. Length 235? mm.

U. S. N. M., no. 51368. Omori,
Japan. D. S. Jordan and J. O. Snyder.
Length 255 mm.

U. S. N. M., no. 57481. Japan.
P. L. Jouy. Length 174 mm.

U. S. N. M., no. 57494. Japan.
P. L. Jouy. Length 157 mm.

U. S. N. M., no. 71371. Tokyo
market. Albatross Collection 1906.
Length 198 mm.

U. S. N. M., no. 71797. Hakodate,
Japan. Albatross Collection 1906.
Length 209 mm.

Sebastodes thompsoni (Jordan and Hubbs)

Sebastodes (Sebastostomus) thompsoni
Jordan and Hubbs, Mem. Carnegie
 Mus., vol. 10, p. 265, fig. 1 (copied
 Jordan and Thompson's figure).
 1925 (type locality, Miyako,
 Japan).

Sebastodes forneri (not Günther)
Jordan and Snyder, Proc. U. S.
 Nat. Mus., vol. 23, p. 757, 1900
 (part). — Jordan and Starks,
 Proc. U. S. Nat. Mus., vol. 27, p. 105,
 1904 (Miyako). — Jordan and
Thompson, Mem. Carnegie Mus.,
 vol. 4, p. 271, pl. 32, fig. 2, 1914
 (Tsushima Straits).

A 737. Danawan Island. September¹²¹⁰
27, 1909. Length 277 mm.

8230. Calvarey Island, Ragay Gulf,
Luzon. March 9, 1909. Length 318 mm.

14433. Gubat, Sorsogon, Luzon. June 23,
1909. Length 120 mm.

9016. Langa Point, Luzon. Length
247 mm.

A 1144. Ragay Island. November 29, 1909.
Length 216 mm.

6160 and 6161. Mansalay, Mindoro.
June 4, 1908. Length 205 to 320 mm.

15063. Nagasayon, Gulf of Luzon.
June 17, 1909. Length 175 mm.

7241. Masinloc Bay, Zambales.
November 22, 1908. Length 230 mm.

Depth $2\frac{3}{5}$ to $2\frac{9}{10}$; head $2\frac{4}{5}$ to 3;
 Snout $4\frac{2}{5}$ in head from snout tip;
 eye $3\frac{1}{5}$ to $3\frac{1}{4}$, greater than snout,
 greatly exceeds interorbital;
 maxillary reaches $\frac{1}{2}$ in eye,
 expansion $1\frac{3}{4}$, length $2\frac{1}{5}$ in
 head from snout tip; double
 symphyseal knob of teeth fitting
 into interspace between ^{expanded} anterior
 lobes of premaxillary teeth; sides
 of jaws and palatines with narrow
 bands of teeth; interorbital $1\frac{1}{3}$ to
 $1\frac{3}{5}$ in orbit, nearly smooth, very
 slightly convex. Lower gill rakers 27.

Head rather smooth, supraorbital and occipital ridges low and partly scaled over; nasal, preorbital, postorbital and occipital spines alone developed on top of head, all small and depressed; 2 sharp preorbital spines, directed down and back; 5 preopercle spines, directed back, median largest;

upper opercular spine longer,
lower little advanced.

625

Scales 77 along lateral line; pores
52 or 53 in lateral line; 17 scales
above, 28 to 30 below. Accessory
scales few, except on nape and
along dorsal base. Head covered
with ctenoid scale to lips.

D. XIII, 14, I, fifth spine $2\frac{1}{4}$ in total
head, III, third ray $2\frac{1}{5}$; A. III, 7, I,
third spine $2\frac{1}{4}$, first ray 2;
caudal $1\frac{2}{5}$, slightly emarginate;
least depth of caudal peduncle
 $3\frac{1}{6}$; pectoral $1\frac{1}{8}$, rays I, 8, VII;
ventral rays I, 5, fin $1\frac{3}{5}$ in
total head length.

Doubtless red in life, in spirits
dusky above and silvery below
lateral line. Upper sides with
dark brown bars. Length 189 mm.
to caudal fin. (Jordan and Hubbs.)
Japan.

Sebastodes matsubarae Hilgendorf,

Sebastes matsubarae Hilgendorf,
Sitzb. Gesell. Naturf. Freunde
Berlin, p. 170, 1880 (type locality,
Hondo; Yezo).

Sebastodes matsubarae Jordan and
Evermann, Bull. U. S. Nat. Mus., no.
47, pt. 2, p. 1833, 1898 (copied). —

Jordan and Snyder, Annot. Zool.
Japan., vol. 3, p. 98, 1901 (reference).

— Jordan and Starbs, Proc. U. S.
Nat. Mus., vol. 27, p. 106, 1904 (Misaki).

— Jordan and Thompson, Mem. Carnegie
Mus., vol. 6, no. 4, p. 272, Sep. 1914 (Luzon
Channel).

East Indies. From Günther's translation of Bleeker's description our specimens differ in that Günther gives 29 soft dorsal rays, 28 anal and caudal bucklers not keeled.

7828 and 7829. Bugauk Island.

January 5, 1909. Length 418 to 486 mm.

5938. Gumbounga. May 25, 1908.

Length 305 mm.

627

Depth $2\frac{1}{2}$; head $2\frac{3}{5}$. Snout $\frac{2}{3}$ of eye; eye $2\frac{3}{4}$ in head; maxillary reaches $\frac{1}{2}$ in eye; lower jaw slightly projecting, symphyseal knob prominent; teeth fine, sharp, in very narrow bands, developed in knob at mandible which fits in notch in premaxillaries; interorbital width $4\frac{4}{5}$ in head, $\frac{3}{5}$ of eye, deeply concave, supra-orbital edges not deeply raised as ridges. Gill rakers $2\frac{1}{2}$ on anterior limb of arch, slender, $\frac{1}{3}$ of eye.

Preocular, supraocular, post-ocular, tympanic, parietal and nuchal spines present. Cranial ridges scarcely developed except parietal ridges, which very high and sharp. Preorbital with front broad rounded lobe and 2 spines. Preopercle spines sharp, 2 upper

rather slender, lowest spines) 628
directed downward, next 2
downward and backward and
2 uppermost backward; opercle
with 2 spines, upper long, sharp
and slender.

Pores 32 in lateral line. Scales
strongly ctenoid. Mandible,
preopercular and maxillary with
fine scales. Fine scales over
soft rays nearly to tips.

D. XIII, 13, first spine equals
soft dorsal height, which subequal
with orbit, penultimate dorsal
spine $4\frac{1}{4}$ in head; A. III, 7, second
spine ~~longer~~ ^{shorter} than third or $2\frac{4}{5}$ in
head; caudal slightly concave;
pectoral rather slender, reaches
base of third anal spine, rays
9, X; ventral reaches ~~and~~ vent.

Bright red in life, colorless
or flesh color in spirits. Fins

without markings. Upper part⁶²⁹
of opercle with diffuse dusky
blotch. Length 280 mm. (Jordan
and Starks.)

Japan.

Sebastodes iracundus Jordan and Starks

Sebastodes iracundus Jordan and Starks,
Proc. U. S. Nat. Mus., vol. 27, p. 107,
fig. 4, 1904 (type locality, Kushiro
in Hokkaido, Japan).

Sebastodes (leucomentum) iracundus

Jordan and Hubbs, Mem. Carnegie Mus.,
vol. 10, no. 2, p. 268, June 27, 1925
(Sapporo; Kushiro)

8233. Galvaney Island, Ragay Gulf. March 9, 1909. Length 500 mm. Smoky purple above, olive yellow below. Lemon and dirty lemon on fins.

12241. Lampinigan Island. September 11, 1909. Length 200 mm.

A 771. Mabal Island. September 29, 1909. Length 290 mm.

14359. Paron Point, Albany Gulf, Luzon. June 21, 1909. Length 145 mm.

8197. Port Busin, Burias Island. March 8, 1909. Length 495 mm.

14680. ~~Langan~~ ^{Langao} Point, Luzon. June 24, 1909. Length 165 mm.

A 690. Si Amil. September 26, 1909. Length 280 mm.

(631)

Depth $2\frac{4}{5}$; head $2\frac{2}{5}$. Snout $4\frac{1}{6}$
in head from snout tip; eye $4\frac{1}{6}$,
equals snout, greater than
interorbital; maxillary reaches
opposite hind eye edge, expansion
 $1\frac{1}{4}$ in eye, length $2\frac{1}{6}$ in head
from snout tip; teeth rather
sharp, in narrow bands at sides
of jaws becoming wider anteriorly,
narrow Λ shaped patch on vomer,
and short narrow patch on
palatines; interorbital 5. Gill
rakers ²¹ on anterior limb of arch, $\frac{2}{3}$ of orbit.
Cranial spines without ridges
except at occiput, where sharp
but rather low. Nasal, preocular,
postocular, tympanic, parietal
and (on one side) nuchal spines
present; preorbital trilobate,
anterior broadly rounded and
other 2 angulated, spineless.
Upper 3 opercular spines closer,
next to uppermost largest and

directed backward.

Pores 30 in lateral line. Scales rough, ctenoid. Head entirely scaled. Small scales on basal $\frac{2}{3}$ of spinous dorsal, on basal half of soft dorsal, anal and caudal, basal $\frac{3}{4}$ of pectoral and on ventrals.

D. XIII, 13, fifth spine $3\frac{1}{2}$ in total head length, second ray $2\frac{1}{8}$; A. III, 7, third spine 3, first ray $2\frac{1}{6}$; caudal $1\frac{7}{8}$, hind edge slightly emarginate; depth of caudal peduncle $4\frac{1}{8}$; pectoral $1\frac{2}{5}$, rays 11, IX; ventral rays I, 5, fin 2 in total head length.

Bright red. Jet black spot close above lateral line below bases of sixth and seventh dorsal spines. Length 550 mm. (Jordan and Starks.)
Japan.

Sebastodes flammeus Jordan and
Starks

Sebastodes flammeus Jordan and
Starks, Proc. U. S. Nat. Mus., vol. 27,
p. 108, fig. 21 (on p. 175), 1908 (type
locality, Misaki, Sagami). —
Jordan and Thompson, Mem. Carnegie
Mus., vol. 6, no. 4, p. 270, pl. 32, fig. 1,
Sep. 1914 (Hokkaido).

Sebastodes (Sebastosomus) flammeus
Jordan and Hubbs, Mem. Carnegie Mus.,
vol. 10, no. 2, p. 268, June 27, 1925
(Kushiro).

~~Neotrichus fuscus~~ ~~new species~~ 1222

Depth $3\frac{2}{5}$; head 4, width 2. Snout $1\frac{2}{3}$; eye 4, $2\frac{2}{5}$ in snout, $1\frac{2}{5}$ in interorbital; teeth 52 to 56 in jaws, small, slender, pointed, little compressed, ends minutely serrated; maxillary $5\frac{1}{4}$ in head; interorbital $2\frac{7}{10}$, broadly convex and with slight median ridge to dorsal. Gill rakers 4 + 11, short, robust, compressed points.

Skin minutely asperous, finely rough to touch.

D. VI, 29, I, sixth spine 3 in head, first ray $2\frac{9}{10}$; A. II, 28, I, second spine $3\frac{3}{5}$, first ray $3\frac{1}{2}$; caudal evenly emarginate, lobe pointed, $1\frac{1}{6}$; least depth of caudal peduncle $5\frac{1}{8}$; pectoral $1\frac{2}{3}$; ventral 2; caudal peduncle with 2 bony bachelers, each with broad, compressed beak, anterior little larger or $1\frac{1}{5}$ in eye.

Large dull brown, under surfaces slightly paler. Head, back and sides with many close-set obscure slightly dark spots, none equal pupil. Iris brown. Dorsal rays and spines brown, each membrane ventral - dusky with 3 or 4 ill-defined ventral-black blotches, tip of each ray grayish to whitish, though obscurely so. Anal like dorsal, largely with but 3 ventral black blotches to each membrane and tip of each ray

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Depth $3\frac{1}{4}$; head $2\frac{2}{5}$. Eye $3\frac{3}{5}$
in head; maxillary reaches below
hind pupil edge, length $2\frac{1}{5}$ in
head; lower jaw strongly projects,
with large knob at symphysis;
^{maxillary reaches below hind edge pupil;}
teeth sharp, curved, in large
single irregular row at sides
of lower jaw, in narrow band
at front and in large knob at
tip with which shuts entirely
outside premaxillaries; last
with wide toothless at front,
narrow band at sides growing
slightly under anteriorly, and
inside of other teeth on each side
of toothless area conspicuous knob
of large curved teeth pointing
irregularly but inward; vomerine
teeth in narrow band and palatine
teeth in single row; interorbital,
 $4\frac{2}{3}$ in head, flat. Gill rakers 21
on anterior limb of arch, $\frac{2}{5}$ of eye.

635

Preocular, supraocular, post-ocular (on one side), tympanic and parietal spines present, last preceded by very sharp moderately high ridges; Cranial spines small and except occiput not preceded by ridges; preorbital with 3 lobes, spineless; preopercle spines sharp, slender, upper 3 directed backward.

D. XIII, 14, fifth spine $2\frac{3}{4}$ in head; A. III, 8, third spine longer than second, 3 in head; pectoral reaches anal, rays 11, VIII.

Body and fins entirely red. Length 330 mm. (Jordan and Starks.)
Japan.

636

Sebastodes scythropus Jordan and Snyder

Sebastodes scythropus Jordan and
Snyder, Proc. U. S. Nat. Mus., vol. 23,
p. 363, pl. 15, 1900 (type locality,
Misaki, near Tokyo, Japan);
Annot. Zool. Japon., vol. 3, p. 97,
1901 (reference). — Jordan and
Starks, Proc. U. S. Nat. Mus., vol.
27, p. 109, 1904 off Misaki.

(— Schmidt, Trans. Pac. Comm. Acad. Sci.
U.S.N.R., vol. 2, p. 96, 1931 (Tokyo).

Sebastodes (Leucomentum) scythropus
Jordan and Hubbs, Mem. Carnegie Mus.,
vol. 10, no. 2, p. 267, June 27, 1925
(Yokohama market).

84073 U.S. ~~N.H.~~ Hawaiian Islands.
Length ~~136~~ mm.

Depth $2\frac{1}{2}$; head $2\frac{3}{5}$. Snout $5\frac{1}{5}$ in head from snout tip; eye $2\frac{3}{4}$, greatly exceeds snout or interorbital; maxillary reaches $\frac{3}{5}$ in eye, expansion 2, length $2\frac{1}{4}$ in head from snout tip; symphyseal patch of lower jaw teeth elevated, fitting into toothless notch of upper jaw, band on vomer and palatines, latter narrow; interorbital $4\frac{1}{3}$, convex, with median longitudinal groove.

Gill rakers $10 + 24$, long, slender.

Nasal spines well developed; preocular, postocular and occipital spines large and sharp, preceded by prominent ridges; tympanic spine acute, smaller than postocular; 2 strong pre-orbital spines, directed downward; 5 large preopercle spines, upper 3 ~~largest~~ with second largest

project backward; close set subopercular and interopercular spine; 2 large flat acute spines on upper part of opercle; 2 small, humeral spines.

Scales 31 in lateral line; pores 28 in lateral line. Head completely scaled. All scales except on fins and branchiostegals ctenoid. Dorsal, anal, caudal and ventral fins with small scales extending almost to tips of spines and rays. Pectoral less extensively scaled.

D. XIII, 13, third height of longest dorsal spine $2\frac{1}{5}$ in head, longest ray $2\frac{2}{3}$; A. III, 6, longest spine $2\frac{2}{5}$, longest ray $2\frac{1}{5}$; hind caudal edge concave; depth of caudal peduncle $3\frac{1}{2}$; pectoral rays 8, IV, fin reaches anal; ventral reaches vent.

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Light red, with brownish, cloud-like blotches of irregular sharp. Blotch equal to half of orbit extending from insertion of dorsal downward to lower edge of interopercle. Opercle little darker above. Patch of dark color on upper median part of body, spreading over hind $\frac{2}{3}$ of spinous dorsal, extending posteriorly below soft dorsal base and reaches upward on front part of latter fin. Dark band on posterior dorsal part of caudal peduncle.

(Jordan and Starks.)

Japan.

640

Sebastodes fuscescens (Houttuyn)

Sparus fuscescens Houttuyn, Verh.
Holl. Maatsch. Wet. Haarlem, vol. 20,
p. 324, 1782 (type locality, Japan). —
Bonnaterre, Tabl. Ichth., p. 99, 1788
(Japan). — Gmelin, Syst. Nat.
Linn., pt. 1, p. 1279, 1789 (reference).
— Walbaum, Arted. Pisc., vol. 3, p.
301, 1792 (copied Gmelin). — Forster,
Fauna Indica, p. 15, 1795 (reference).
— Schneider, Syst. Ichth. Bloch,
p. 284, 1801 (Japan). — Lacépède,
Hist. Nat. Poiss., vol. 4, pp. 32, 108;
1802; vol. 3, pl. 17, fig. 3 (Japan).

Sebastodes fuscescens Jordan and
Starks, Proc. U. S. Nat. Mus., vol. 27,
p. 110, 1904 (Otaru, Suwayu, Amori,
Same, Mororan, Hakodate).

Naso lituratus (Schneider).

Acanthurus lituratus Schneider, Syst. Ichth.

Bloch, 1801, p. 216. no locality (in Forster).

— Seale and Bean, Proc. U. S. Nat. Mus.,
vol. 33, 1907, p. 247 (Zamboanga). — Fowler
and Ball, Bishop Mus. Bull., no. 26, 1925
(1926), p. 19 (Johnston and Wake Islands).

Harpurus lituratus (Forster) Schneider,

l.c. (name in synonymy).

Naseus lituratus Valenciennes, Hist. Nat.

Pois., vol. 10, 1835, p. ²⁸²~~281~~ (Tahiti, New
Ireland, Ulae, Gulf of Suez, Red Sea,
Mauritius). — Bleeker, Nat. Tijds. Ned.

Indie, deel 3, 1852, p. (740) 763 (Macassar);
deel 8, 1855, p. 306 (Batoe Island); deel 13,
1857, p. 372 (Sangi Island); deel 17, 1858-
59, p. 130 (Atapoepe, Timor). — Günther,

Cat. Fish. Brit. Mus., vol. 3, 1861, p. 353 (type,
Anioteum, Malay Archipelago, Red Sea).

— Bleeker, Ned. Tijds. Dierk., deel 1, 1863,

Sebastodes (Rosicola) fuscescens
Jordan and Hubbs, Mem. Carnegie
Mus., vol. 10, No. 2, p. 260, June
1925

— Schmidt, Trans. Pac. Comm.
Acad. Sci. U S S R, vol. 2, p. 99,
1931 (~~Fusces~~ Fusan).

Sebastes inermis (not Cuvier) Schlegel,
Fauna Japonica, Poiss., pts. 2-4,
p. 47, pl. 21, figs. 3-4, 1843 (Japan).

Sebastes nigromaculatus Günther,
Ann. Mag. Nat. Hist. London, ser. 4,
vol. 12, p. 377, 1873 (type locality,
Chefoo, China).

Sebastes nigromaculatus Jordan
and Snyder, Annot. Zool. Japon.,
vol. 3, p. 97, 1901 (Fuschi-fu).

Sebastes schlegelii Hilgendorf, Sitzb.
Gesell. Naturf. Freunde Berlin,
p. 171, pl. , 1880 (type locality,
Tokyo; Hakodate). — Steindachner
and Döderlein, Denks. Akad. Wiss.
Wien, math.-naturw. Kl., vol. ,
p. 202, 1884 (Tokyo, Hieiok,
Hakodate).

1312

Siganus sutor (Valenciennes).

Amphacanthus sutor Valenciennes, Hist.
Nat. Poiss., vol. 10, 1835, p. ¹⁴⁸108. Seychelles,
Bourbon, Malabar. — Bleeker, Verh. Bat.
Genoot. (Nal. Delt. Bengal), deel 25, 1853,
p. 48.

Tenuthis sutor Günther, Cat. Fish. Brit.
Mus., vol. 3, 1861, p. 317 (copied). — Day,
Fishes of Malabar, 1866, p. 126. — Day,
Fishes of India, pt. 1, 1875, p. 167, ^(Playfair's example) —
Klunzinger, Sitzb. Akad. Wiss. Wien, band 80,
heft 1, 1877, p. 393 (Port Darwin). — Day,
Fauna British India, vol. 2, 1889, p. 91,
fig. 42. — Sauvage, Hist. Nat. Madagascar,
Poiss., 1891, p. 289.

Siganus sutor Fowler, Bishop Mus. Bull.,
no. 22, 1925, p. 13 (Guam).

Buro brunneus (Pomeron) Lacépède, Hist.
Nat. Poiss., vol. 5, 1802, pp. 421, 422.

Sebastodes schlegelii Jordan and
Svermann, Bull. U. S. Nat. Mus.,

No. 47, pt. 2, p. 1834, 1898 copied. —
Dagoba and Matsuura, Cat. Zool. Spec. Tokyo Mus., Vertebr., p.
130, 1920 (Hoheji, Mutsu).

Sebastodes schlegelii Jordan and
Snyder, Annotat. Zool. Japon., vol.
3, p. 98, 1901 (reference).

Sebastodes hakodatis Jordan and
Snyder, Proc. U. S. Nat. Mus., vol. 23,
p. 361, pl. 14, 1901 (type locality,
Hakodate, Japan); Annotat. Zool.
Japon., vol. 3, p. 97, 1901 (reference).

Sebastodes (Sebastocomus) schlegelii Jordan
and Hubbs, Mem. Carnegie Mus., vol. 10, no. 2,
p. 267, June 27, 1925 (Otaru; Sapporo).

peduncle and base of crotch, both with blue spots. Pectoral dusky lemon yellow. Ventral very pale, with slight orange tinge in front of spines.

5825. Tatubada Point. May 15, 1908. Length 255 mm.

15426 and 15427. Ilugan Bay near Rita Island. December 29, 1908. Length 180 to 192 mm.

84241. U.S.N.M. Zamboanga. Dr. Fred Baker. 2 ex. amplex. Length 183 to 188 mm.

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Depth $2\frac{4}{5}$ to 3; head $2\frac{2}{5}$ to $2\frac{1}{2}$, width 2 to $2\frac{1}{4}$. Snout $3\frac{3}{4}$ to $4\frac{1}{8}$ in head from snout tip; eye $3\frac{1}{5}$ to 5, 1 to $1\frac{1}{4}$ in snout, greater than interorbital in young to $1\frac{1}{5}$ in interorbital with age; maxillary reaches $\frac{3}{4}$ in eye in young, to hind eye edge with age, expansion $1\frac{1}{4}$ to $1\frac{2}{3}$ in eye, length 2 in head from snout tip; teeth finely villiform, in bands in jaws, on vomer and palatines; interorbital $4\frac{1}{8}$ to $4\frac{1}{3}$, low, nearly level to slightly convex. Gill Rakers 8 + 18 or 19, lanceolate, equals gill filaments or $1\frac{7}{8}$ in eye. Small pair of nasal spines; 3 pairs of supraorbital spines, with median longest; long pair of occipital keels, ^{each} entering behind in small spine; 3 broad, short,

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preorbital spines; 5 broad spines on preopercle; small suprascapular spine; 2 opercular spines, one above other and upper little longer.

Scales 68 to 70 + 6 or 7 close above and along lateral line; 44 or 45 + 1 tubular scales in lateral line; 14 scales above, 20 below, 40 to 42 predorsal forward until above nostrils; 18 to 20 from lower eye edge to angle of preopercle ridge. Maxillary largely naked, also muzzle. Bases of fins mostly with fine scales. Scales with 10 to 14 basal radiating striae; 25 to 27 slender apical denticles, with 3 to 5 transverse series of basal elements; circuli fine, slightly coarser apically.

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D. XIII, 12, I, fourth spine $2\frac{1}{8}$ to $2\frac{3}{4}$ in total head length, third ray 2 to $2\frac{1}{4}$; A. III, 7, I, second spine $2\frac{2}{3}$ to $3\frac{1}{8}$, second ray 2 to $2\frac{1}{8}$; caudal $1\frac{3}{5}$ to $1\frac{2}{3}$, slightly convex behind; least depth of caudal peduncle $3\frac{3}{5}$ to $3\frac{3}{4}$; pectoral $1\frac{1}{3}$ to $1\frac{3}{5}$, rays I, 10, VII; ventral I, 5, fin $1\frac{4}{5}$ to $1\frac{7}{8}$ in total head length.

Brown, but slightly paler below. Whole body above more or less mottled with darker, sometimes with obscure darker blotches. Fins all brownish, lower ones scarcely paler. Iris brownish. Sometimes 2 oblique, obscure, dark brown bands from lower eye edge across cheek. Fins sometimes gray black terminally.

China, Korea, Japan.

U. S. N. M., no. 22581. Kadzusa, 647
Japan. Government of Japan.
Length 223 mm. As Sebastes inermis.

U. S. N. M., no. 45286. Ginsan,
Korea. P. L. Jouy. August 2, 1886.
Length 45 to 60 mm. Nine examples.
As Sebastodes hakodatis.

U. S. N. M., no. 45287. Ginsan,
Korea. P. L. Jouy. Summer of 1885.
Length 142 mm.

U. S. N. M., no. 49508. Hakodate,
Japan. Albatross Collection.
September 19, 1896. Length 64 to 90 mm.
Fourteen examples.

U. S. N. M., no. 51232. Hakodate.
D. S. Jordan and J. O. Snyder. Length
183 to 315 mm. Three examples.
As Sebastodes hakodatis.

U. S. N. M., no. 51239. Otaru.
J. O. Snyder and D. S. Jordan.
Length 46 to 58 mm. Ten
examples. As Sebastodes hakodatis.

U. S. N. M., No. 51246. Omori, ⁶⁴⁸
Japan. D. S. Jordan and J. O.
Snyder. Length 47 to 180 mm.
Nine examples. As Sebastodes hakodates.

U. S. N. M., No. 51247. Tokyo.
D. S. Jordan and J. O. Snyder.
Length 208 to 288 mm. Two
examples. As Sebastodes hakodates.

U. S. N. M., No. 51305. Mororan.
D. S. Jordan and J. O. Snyder.
Length 44 to 148 mm. Five examples.
As Sebastodes hakodates.

U. S. N. M., No. 51319. Otaru.
D. S. Jordan and J. O. Snyder.
Length 38 to 55 mm. Seven
examples. As Sebastodes hakodates.

U. S. N. M., No. 57551. Japan.
P. L. Jouy. Length 176 mm. As
Sebastodes schlegelii.

U. S. N. M., No. 62375. Port Arthur,
Korea. J. F. Abbott. Length 114 to
155 mm. Ten examples.

U. S. N. M., No. 71669. Mororan, ⁶⁴⁹
Hokkaido. Albatross Collection
1906. Length 81 to 138 mm. Eleven
examples.

U. S. N. M., No. 71945. Hakodate.
Albatross Collection 1906. Length
122 to 144 mm. Five examples.

U. S. N. M., No. 71958. Otaru.
Albatross Collection 1906. Length
114 to 154 mm. Two examples.

U. S. N. M., No. 71971. Tokyo.
Albatross Collection 1906. Length
71 to 212 mm. 21 examples.

U. S. N. M., No. 85875. China.
A. Sowerby. Length 115 to 163
mm. Six examples. D. XIII, 12, I;
A. III, 7, I. Dark band traverses
maxillary, which reaches hind eye edge.

U. S. N. M., No. 93044. Japan.
P. L. Jouy. Length 110 mm.

Sebastodes tanakae Snyder

Sebastodes tanakae Snyder, Proc.
U. S. Nat. Mus., vol. 40, p. 537, 1911

type locality, Hakodate, Japan in
vol. 42, p. 427, pl. 54, fig. 2, 1912
(type).

1211
6258 to 6260. Medio Island,
Galera Bay, Mindoro. June 9, 1908.
Length 265 to 388 mm.

8888. Palapay Bay vicinity, Luzon.
June 16, 1909. Length 355 mm.

8735. Fort Igajo, Catanduanes
Island. June 10, 1909. Length 275 mm.

7381. Fort Calton, ~~Busuanga~~ ^{Busuanga} Island.
December 15, 1908. Length 35 1/2 mm.

7314. Sablayan Bay, Mindoro.
December 12, 1908. Length 250 mm.

^{6442 and}
⁶⁴⁴³. Tiliq; Lubang. July 14, 1908.
Length 205 ^{to 228} mm.

7174. West coast of Palani Island.
November 18, 1908. Length 208 mm.
Yellowish stripe across preorbital
from eye. Lips orange. Terminal

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Depth $2\frac{3}{5}$; head $2\frac{4}{5}$, snout $4\frac{1}{10}$ in head from snout tip; eye $5\frac{1}{3}$, $1\frac{1}{4}$ in snout, greater than interorbital; maxillary reaches below hind eye edge, expansion $1\frac{1}{8}$ in eye, length $2\frac{1}{8}$ in head from snout tip; teeth very fine, in broad patches in jaws, on vomer and palatines; interorbital 6, flat. Gill rakers 7+14, short, and 5-above and 9 or 10 below rounded rudiments.

Spines on head strong, high, not sharp; nasal, preocular, postocular and tympanic spines present, parietal ridge high and ends in low spine; preorbital spine broad, flat, triangular; preopercular spines 3, close together, directed back and 2 short rounded knobs below; 2 opercular spines, broad, flat;

2 humeral spines, upper short and acute, lower broad, flat and its tip serrated.

Pores in lateral line 34; scales along lateral line $55 + 5?$; 15 above, 17 below. Many small supplemental scales, often 10 or more cover base of single large scale. Head crowded with small, weakly ctenoid scales, also with small supplemental scales. Muzzle naked, inclusive of maxillary. Spinous dorsal ~~naked~~, other fins with minute scales extending nearly to tips of rays.

D. XIII, 13, I, fourth spine $2\frac{1}{10}$ in total head length, third ray $1\frac{7}{8}$; A. III, 7, I, third spine 3, third ray $2\frac{1}{10}$; caudal $1\frac{4}{5}$, convex behind; least depth of caudal peduncle $3\frac{1}{5}$, rays I, 9, IX; ventral rays I, 5, fin $1\frac{3}{4}$ in total head

length.

Dark brown, with obscure
clouding.

Japan.

U. S. N. M., No. 68236. Hakodate,
Japan. Albatross Collection 1906.
Length 290 mm. Type.

Genus Sebastichthys Gill

Sebastichthys Gill, Proc. Acad. Nat. Sci. Philadelphia, p. 329, 1862.

(Type Sebastes nigroinctus Cyres, designated by Bleeker, Verh. Kon. Akad. Wet. Amsterdam, vol. 16, no. 2, p. 2, 1876.)

Pteropodus Eigenmann and Beeson, Amer. Nat., vol. , p. 670, 1893.

(Type Sebastichthys maliger Jordan and Gilbert, orthotypic.)

Sebastocles Jordan and Hubbs, Mem. Carnegie Mus., vol. 10, no. 2, pp. 260, 270, June 27, 1925. (Type Sebastes elegans (Döderlein) Steindachner and Döderlein, orthotypic.)

max margin bright blue. caudal with
white basal band. Pectoral without
yellow.

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? Sebastocharis Jordan and Evermann,
Proc. Cal. Acad. Sci., ser. 4, vol. 16,
p. 507, 1927. (Type Sebastichthys
sericeus Jordan and Gilbert,
orthotypic.)

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Closely allied with Sebastodes,
differing in the nearly straight
base of the skull, convex
interorbital and short, thick
gill rakers.

Analysis of Species

a. Size larger; interorbital broader.

b. Pteropodus. Gill rakers 14 to 16 below, longer, slender, $2\frac{1}{2}$ to 3 in eye; lower jaw not projecting.

c. Brown, with paler marbling and spots of darker and white; usually dark cross shade under each half of dorsal. vulper.

c.² Nearly uniform dusky brown, covered by snowy spots; second anal spine enlarged. nivosus.

c.³ Bright greenish yellow, with an irregular dark shade above and below, leaving lateral line in dark streak; dark shade along dorsal base; dark shades across cheeks. trivittatus.

b.² Gill rakers 10 to 14 below, short, thick, 4 or 5 in eye; fins usually well spotted.

d. Cranial ridges rather low;

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gray, clouded or barred and spotted with dark; soft fin with small spots; cheek with dark bars. oblongus.

d.² Cranial ridges high and blunt; blackish, usually with yellowish areas, one below each dorsal; lower parts and fins usually, but not always profusely spotted with dark.

e.¹ Scales 40 in lateral line; tubes 32. nigricans.

e.² Scales 53 or 54; tubes 33 or 34. pachycephalus.

a.² Sebastodes. Size small; inter-orbital narrow, deeply concave; gray, well mottled and barred with reddish; fins barred and mottled. elegans.

b.³ Gill rakers 20 to 22 below, $\frac{1}{4}$ of eye. capensis.

~~Sebastichthys~~

Sebastodes vulpes (Steindachner,
(Döderlein) and Döderlein)

Sebastes vulpes, Steindachner and
Döderlein, Denks. Akad. Wiss. Wien,
Math.-naturw. Kl., vol. 49, p. 203, pl.
2, 1884⁵ (type locality, Tokyo).

Sebastodes vulpes Jordan and Evermann,
Bull. U. S. Nat. Mus., no. 47, pt. 2, p. 1835,
1898 (copied). — Jordan and Snyder,
Annotat. Zool. Japon., vol. 3, p. 98,
1901 (reference). — Jordan and
Starks, Proc. U. S. Nat. Mus., vol. 27,
p. 113, 1904 (Hakodate, Same, Miyako).
— Tanaka and Matsunuma, Cat. Zool.
Spec. Tokyo Mus., Vertebr., p. 130, 1920
(Hakodate).

aseus tuber Guichenot, Notes I. Reunion, ¹¹⁸³ Tome 2,
1862, p. 27.

Acanthurus tuberosus Jordan and Seale,
Proc. U. S. Nat. Mus., vol. 33, 1907, p. 247
(Zamboanga).

Homoceros tuberosus Snyder, Proc. U. S. Nat.
Mus., vol. 42, 1912, p. 510 (Okinawa).

Aspisurus carolinarum Quoy and Gaimard,
Voy. Uranie Zool., 1825, p. 375, plate 63, fig. 1.
Caroline; Guam.

Aseus tonganus (Quoy and Gaimard)

Valenciennes, Hist. Nat. Poiss., vol. 10, 1835,
p. 216. Tongatabou.

Aseus punctulatus Steindachner, Sitzb.

Abad. Wiss. Wien, band 70, heft 1, 1874, p. 386,
plate 1 (Mauritius).

Gillcanthus metopophorus Jenkins, Bull.

U. S. Fish Comm., vol. 22, 1902 (1903), p. 481,

fig. 31. Hawaii.

Sebastodes (Pteropodius) vulpes
Jordan and Hubbs, Mem.
Carnegie Mus., vol. 10, no. 2, p.
270, June 27, 1925 (Otaru).

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Depth $2\frac{4}{5}$ to $2\frac{7}{8}$; head $2\frac{1}{2}$ to $2\frac{3}{5}$,
width $2\frac{1}{4}$ to $2\frac{1}{3}$. Snout 4 to $4\frac{1}{8}$
in head from snout tip; eye $3\frac{3}{4}$
to 4, 1 to $1\frac{1}{8}$ in snout, little
greater than interorbital; maxillary
reaches opposite hind eye edge,
expansion $1\frac{3}{4}$ to $1\frac{7}{8}$ in eye,
length 2 in head from snout tip;
teeth villiform, in broad bands
in jaws, on vomer and palatines;
interorbital 4 to $4\frac{4}{5}$, depressed,
little concave. Gill rakers 9+17,
lanceolate, $1\frac{3}{5}$ in eye; gill
filaments $\frac{3}{4}$ of gill rakers.
Pair of nasal spines; one pair of
antero-supraorbital spines, 2
pairs of postero-supraorbital and
long occipital keel each side
followed by small spine; strong
suprascapular spine, with spine
also forward and elevated; 2 low

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obtuse, broad spines at lower preorbital edge; 5 preopercular spines; 2 opercular, upper much larger and extends backward.

Scales 58 or 59 + 3 or 4 close along and above lateral line; 30 + 2 tubular scales in lateral line; 12 scales above, 17 below; 48 predorsal scales forward until over nostrils, of which 12 extend to occipital spines; 14 + 4 rows on cheek from lower eye edge to hind angle of preopercle ridge. Maxillary with small patch of fine scales. Fins all finely scaly basally. Scales with 9 basal radiating striae; 17 to 20 slender, pointed, apical denticles; circuli fine, little coarser apically.

D. XIII, 13, I, fourth spine $2\frac{1}{8}$ to $2\frac{1}{4}$ in total head length, fourth ray $2\frac{1}{3}$ to $2\frac{2}{5}$; A. III, 6, I, second

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spine $2\frac{4}{5}$ to $2\frac{7}{8}$, second ray $2\frac{1}{10}$;
caudal $1\frac{7}{8}$ to 2, little convex behind;
least depth of caudal peduncle
 $3\frac{3}{4}$ to $3\frac{4}{5}$; pectoral $1\frac{1}{3}$ to $1\frac{2}{5}$,
rays I, 8 or 9, II; ventral rays
I, 5, fin $1\frac{4}{5}$ to $1\frac{9}{10}$ in total head.

Light brown generally, with
4 broad, darker brown saddles
on ~~body~~ back; second at middle
of spinous dorsal, and third at
soft dorsal more distinct and
all marked or variegated with
small white spots, in which dark
areas sometimes narrowed to form
reticulations. Head and body above
all with dark specks, bars, dots
and bars scattered all about.
Dark brown postocular line and
2 others parallel, obliquely down
and back over cheek, also one more
traverses maxillary. Dorsals dark
brown, with pale spots, interspaces.

often forming reticulations and smaller on soft dorsal. Caudal dark or blackish brown, with pale spots and fin dark posteriorly. Anal dark brown and marked like caudal, though with fewer pale spots. All soft vertical fins with narrow pale to whitish margins. Pectoral pale or whitish, with few brown spots above. Ventral dark or blackish brown terminally, mottled with darker or blackish, basally and front edge paler to whitish. Iris pale to whitish. Lower surface of head immaculate.

Japan. A very handsome speckled species.

U. S. N. M., no. 48143. Hako, Japan.
S. Hozawa. Length 151 mm. As
Sebastes variabilis.

U. S. N. M., no. 71787. Hakodate,
Japan. Albatross Collection 1903.
Length 192 to 233 mm. Three
examples.

Sebastichthys nivosus (Hilgendorf)

Sebastes nivosus Hilgendorf, Sitzs.
Ges. Naturf. Freund. Berlin, p. 171,
1880 (type locality, Japan). —

Steindachner and Gönderlein, Denks.
Akad. Wiss. Wien, math.-naturw.
Kl., vol. 49, pt. 1, p. 171, 1885 (Kochi,
Tokyo).

Sebastodes nivosus Jordan and Evermann,
Bull. U. S. Nat. Mus., no. 47, pt. 2,
p. 1833, 1898 (on Steindachner). —
Jordan and Snyder, Annot. Zool.
Japon., vol. 3, p. 98, 1901 (reference).

A1506 and A1507. Bira-birahan Island,
Borneo. December 31, 1909. Length 262
to 265 mm.

A981 and A982. Binang ^{uu} Binang Island.
November 17, 1909. Length 257 to 267 mm.

A1375 and A1376. Basa Island, Gulf
of Boni, Celebes. December 17, 1909.
Length 240 to 250 mm. Small blackish
blotch behind upper angle of gill opening,
rapidly fading away. Somewhat yellowish
wash-on breast below pectoral. Caudal
spine with somewhat orange socket.
Dorsal blackish along edge, few obscure
darker bars posterior and terminal on
soft fin, 1 distinct along entire margin.
Anal with bright blue border.
Caudal with white basal band,

Sebastichthys nivosus Jordan and
Starks, Proc. U. S. Nat. Mus., vol. 27,
 p. 114, 1904 (Name; Misaki). —

Franz, Abhandl. Kon. Bayer. Akad.
 Wiss., vol. 4, Suppl. Band 1, p. 70,
 1910 (Yokohama; Aburatsubo).

Sebastodes (Pteropodus) nivosus
Jordan and Hubbs, Mem. Carnegie
 Mus., vol. 10, no. 2, p. 260, June 27,
 1925 (

— Schmidt, Trans. Pac. Comm. Acad.
 Sci. U. S. R., vol. 2, p. 99, 1931 (Tokyo).

and olive. Front and side of head brown, becoming blackish on vertical flap. Very short dark blotch behind upper angle of gill opening. Breast mostly dusky, also with orange shades. Fins dull violaceous, dorsal edge somewhat purplish with submarginal translucent bar; anal margin bright purple. White band across caudal base. Caudal spine with orange socket. Paired fins olive or black, without marks or color variation.

8531. Verde del Sur Island. April 6.

1909. Length 220 mm.

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Depth $2\frac{3}{4}$; head $2\frac{2}{3}$. Snout $4\frac{2}{5}$ in head; eye $4\frac{2}{5}$; maxillary reaches opposite hind rim of orbit, or little beyond with age; interorbital $5\frac{1}{2}$ in head, between elevated supraocular ridges weakly convex. Lower gill rakers 16, moderate or $\frac{1}{3}$ of eye.

Cranial ridges and spines well developed. Nasal, preocular, postocular, tympanic and parietal spines present; lower preorbital border with 3 more or less rounded lobes, last angulated, but without spine; preopercle spines broad, blunt, short.

Pores 36 + 2 or 3 in lateral line. Head scaly, except jaws before nostrils, preorbital and most of interorbital. Scales of head small, firm, rough, with

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accessory scales like those on body.

D. XIII, 12; A. III, 7; pectoral rays 8, X, length $1\frac{1}{2}$ in head and tips reach past ventrals; caudal slightly convex, equals ventral; ventral more than $1\frac{3}{5}$ in head.

Blackish brown, with innumerable, small, white dots on body and fins. Sometimes uniform coloration of body interrupted by lighter shades.

(Jordan and Starck.)

Japan. Said to be "well distinguished by the profuse starry spots".

Sebastichthys trivittatus (Hilgendorf)
Sebastes trivittatus Hilgendorf,
 Sitzs. Ges. Nat. Freund. Berlin,
 p. 171, pl. 172, 1880 (type locality,
 Yezo, Japan).

Sebastodes trivittatus Jordan and
Evermann, Bull. U. S. Nat. Mus.,
 no. 47, pt. 2, p. 1834, 1898 (copied).
 — Jordan and Vnyder, Annot.
 Zool. Japon., vol. 3, p. 9, 1901
 (reference). — Jordan and Starks,
 Proc. U. S. Nat. Mus., vol. 27, p. 114,
 fig. 5, 1904 (Aomori; Kushiro).

8780. *Quinalasay* Island. June 12, 1909. ¹⁰³⁹

Length 290 mm.

~~8980 and 8981. Rapa Rapa Island.~~

~~June 22, 1909. Length 217 to 290 mm.~~

~~Brown, with orange shades on breast and tail. Caudal spine with orange socket. Head without stripes or spots. Dusky blotch on shoulder about size of pupil. Dorsal and anal without bars, anal edge blue, dorsal edge apparently not blue. Caudal without white in forks, but with white bar at base of fin. Pectoral without yellow.~~

~~19826 and 19827. Romblon. March 26,~~

~~1908. Length 83 to 102 mm.~~

~~1 example. San Pascual, Burias Island, in tide pool. March 8, 1909. Length 50 mm.~~

Sebastoiles (Pteropodus) trivittatus
Jordan and Hubbs, Mem. Carnegie
Mus., vol. 10, no. 2, p. 270, June 27,
1925 (Otaru; Nemuro).

Type Zebrasoma Swainson.

Zebrasoma Swainson, Nat. Hist. An., vol. 2,
1839, p. 256. Type Deanthurus velifer Bloch,
monotypic.

Deanthurus Bloch, Naturg. Ausl. Fische, band
9, 1795, p. 105. Type Deanthurus velifer
Bloch, monotypic.

Scopas Bonaparte, Prosp. Syst. It. Générale
(Saggio sist. an. vert.), 1831, p. 109. Atypic.
Type Deanthurus scopas Valenciennes,
tautotypic, affixed by Jordan, Genera of
Fishes, pt. 2, 1919, p. 175.

Laepichthys Ogilby, Mem. Queensland Mus.,
vol. 5, 1916, p. 173. Type Deanthurus rostratus
Günther, orthotypic.

Sebastichthys trivittatus Franz,
Abhandl. Kon. Bayer. Akad. Wiss.,
vol. 4, Suppl. Band 1, p. 70, 1910
(Yokohama) — Izuka and
Matsuura, Cat. Zool. Spec. Tokyo Mus.,
Verteb., p. 130, 1920 (Hokkaido).

9356. Murcielago Bay, Mindoro. ¹⁰³⁸

August 20, 1909. Length 300 mm.

2 examples. Pandanan Island.

March 23, 1909. Length 30 mm.

8751. Parangpony Island. June 10, 1909.

Length 335 mm.

8736. Port Ligo, Catanduanes Island.

June 10, 1909. Length 305 mm.

1 example. Port Galera. June 9, 1908.

Length 32 mm.

10488 to 10490, 10732, 11016, 18965 and 18966.

Port Maricaban. July 21, 1908. Length
194 to 240 mm.

13473. Port San Pio Quinto, Camiguin
Island. November 10, 1908. Length 80 mm.

22439 and 22470. Pucot River, Marikina.

January 29, 1909. Length 67 to 73 mm.

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Depth $2\frac{1}{2}$ to $2\frac{3}{5}$; head $2\frac{3}{5}$, width $1\frac{3}{4}$ to 2. Snout $3\frac{2}{5}$ in head; eye $4\frac{1}{8}$, $1\frac{1}{4}$ in snout, greater than interorbital in young to subequal with age; maxillary reaches opposite hind eye edge, expansion $1\frac{2}{7}$ to $1\frac{1}{4}$ in eye, length 2 in head from snout tip; teeth villiform, fine, in bands in jaws, narrow bands on vomer and palatines; interorbital $5\frac{1}{2}$ to 6, low, depressed, or slightly concave. Gill rakers $8+20$, lanceolate, 4 to 6 above and below low rudimentary tubercles; $1\frac{1}{5}$ in gill filaments, which $1\frac{3}{4}$ in eye. Pair of nasal spines; 1 antero-supraorbital spine, 2 postero-supraorbitals; long occipital keel ending in spine behind; 2 very broad, flat, rounded points on lower preorbital

edge; 5 preopercle spines; strong suprascapular spine, preceded by moderate upper spine and low, short, inconspicuous point below it; 2 opercular spines, upper longer and slightly posterior.

Scales $46 + 3$ close above and along lateral line; $37 + 1$ tubular scales in lateral line; 11 scales above, 17 below, 38 predorsal of which 10 or 11 extend forward to occipital spine; $22 + 7$ scales obliquely across cheek. Maxillary with very minute crowded scales. Scales with 8 to 13 basal radiating striae; 20 to 23 rather weak apical denticles, with 0 to 7 transverse basal elements; circuli fine.

D. XIII, 12, I or 13, I, fourth spine $2\frac{1}{4}$ to $2\frac{1}{3}$ in total head length,

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fourth ray $2 \frac{1}{10}$ to $2 \frac{1}{3}$; A. III, 6, I,
second spine $2 \frac{1}{4}$ to $2 \frac{2}{5}$, second
ray $2 \frac{1}{10}$ to $2 \frac{1}{8}$; caudal $1 \frac{4}{5}$ to 2,
rounded behind; least depth
of caudal peduncle $3 \frac{1}{5}$ to $3 \frac{4}{5}$;
pectoral $1 \frac{1}{2}$ to $1 \frac{3}{5}$, rays I, 8, IX;
ventral rays I, 5, fins $1 \frac{3}{4}$ to
 $1 \frac{7}{8}$ in total head length.

Light brown generally.
Two dark brown longitudinal
parallel bands, one each side of
lateral line, often variably
incomplete or broken in places.
Eye with 3 dark bands radiating
from its hind edge and one from
lower eye edge down across
cheek. Dark band traverses
maxillary. Iris gray. Fins
brownish, sometimes quite dark
terminally, especially ventral.
Japan. A handsome species

with characteristic color pattern⁶⁷⁶
due to the dark longitudinal
bands on each side of lateral
line.

U. S. N. M., No. 48142. Habo,
Japan. S. Kozawa. Length 290 mm.
U. S. N. M., No. 71947. Otaru,
Japan. Albatross Collection. Length
143 mm.

Sebastichthys oblongus (Günther)

Sebastes oblongus Günther, Rep. Voy.
Challenger, vol. 1, pt. 6, p. 64, pl. 18, 1880
 (type locality, Inland Sea, Japan;
 market of Yokohama). — Hilgendorf,
 Sitzs. Gesell. Naturf. Freund.
 Berlin, p. 171, pl., 1880 (Tokyo).
 — Steindachner and Döderlein,
 Denks. Akad. Wiss. Wien, math.-naturw.
 Kl., vol. 49, pt. 1, p. 204, 1885 (Tokyo).
 — Nyström, Bih.^{Kon.} Svensk. Vet. Akad.
Handl. Stockholm, vol. 13, af. 4, no. 4,
 p. 20, 1887 (Nagasaki).

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gill opening. Caudal spine with more or less orange socket and orange band across caudal peduncle more distinct. Dorsal edge black, anal edge blue, each fin with few dark bars terminally on posterior portions. Pectoral without yellow.

7467. Maculabo Island. June 14, 1909.
Length 195 mm.

9204 and 9205. Mahinog, Camaguin Island. August 3, 1909. Length 211 to 280 mm.

6791. Malanipa Island. September 8, 1908. Length 248 mm. Brown, with very small dark dash across upper angle of gill opening, narrower than pupil. Caudal spine with orange socket.

Sebastodes oblongus Jordan and
Evermann, Bull. U.S. Nat. Mus., no. 47,
 pt. 2, p. 1830, 1898 (copied). —

Jordan and Snyder, Annot. Zool.
 Japon., vol. 3, p. 98, 1901 (reference).

— Jordan and Starks, Proc. U.S.
 Nat. Mus., vol. 27, p. 116, 1904 (copied).

Sebastichthys oblongus Franz, Abhandl.
 Kon. (Akad. Bayer.) Wiss., vol. 4,
 Suppl. Band 1, p. 71, 1910 (Yokohama).

— Izuka and Matsuura, Cat. Zool. Spec.
 Mus. Tokyo, Vertebr., p. 129, 1920
 (Tokyo market).

220 to 280 mm. Generally deep dusky, longitudinal lines obscure. Very small black blotch behind upper angle of gill opening. Head and breast uniform brown, without spots. Dorsal with 1 or 2 dusky bars, most distinct in hind portion, with very narrow blue edge. Anal edge blue and submarginal band black, also 1 or 2 other dusky bands. Caudal with white band. Pectorals slightly olive terminally, not yellow.

11912. Jolo market. February 11, 1908.
Length 147 mm.

A 480 and A 484. Lampinigan Island.
September 11, 1909. Length 230 to 250 mm.
Dusky dash across upper angle of

Sebastodes mitukurii (Cramer)
Jordan and Evermann, Bull. U. S.
 Nat. Mus., No. 47, pt. 2, p. 1831, 1898
 (on Steindachner). — Jordan and
Snyder, Annot. Zool. Japon., vol. 3,
 p. 98, 1901 (reference).

Sebastichthys mitukurii Jordan
 and Starks, Proc. U. S. Nat. Mus.,
 vol. 27, p. 116, 1904 (Hakodate,
 Omori, Matsushima, Tokyo,
 Yokohama, Onomichi, Kobe, Nagasaki).
 — Franz, Abhandl. Kon. Bayer. Akad.
 Wiss., vol. 4, Suppl. Band 1, p. 71, 1910
 (Yokohama). — Jordan and Thompson,
 Mem. Carnegie Mus., vol. 6, no. 4, p. 273, Sep.
 1914 (Shimonoseki).

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with very minute lines, one on each row of scales. No white chin stripe. No yellow through eye. Very small dusky band below and behind lower angle of gill opening. Caudal spine with orange socket. Vertical fins darker than body, dorsal with apparent slate edge. Anal blue below over black line. Caudal dark, without white edge and with short dark bar across upper portion of base. Paired fins dark, no yellow on pectorals.

A1232 and A1233. Gomonno Island.
December 3, 1909. Length 255 to 290 mm.

9252 and 9259. Inamucan Bay,
Mindanao. August 8, 1909. Length

Sebastodes (Pteropodus) mitsukurii
Jordan and Hubbs, Mem.
Carnegie Mus., vol. 10, no. 2, p. 270,
June 27, 1925 (Toba; Mikawa
Bay; Fukuji). — Schmidt, Trans.
Pal. Comm. Acad. Sci. USSR,
vol. 2, p. 98, 1931 (Nagasaki).

Depth $2\frac{4}{5}$ to $2\frac{7}{8}$; head $2\frac{1}{3}$ to $2\frac{3}{5}$, width $1\frac{7}{8}$ to $2\frac{1}{2}$. Snout $3\frac{1}{2}$ to 4 in head from snout tip; eye 4 to $5\frac{1}{5}$, 1 to $1\frac{2}{5}$ in snout, greater than interorbital in young to $1\frac{1}{5}$ in interorbital with age; maxillary reaches $\frac{4}{5}$ in eye in young ok to hind eye edge with age, Expansion $1\frac{4}{5}$ to $1\frac{1}{2}$ in eye, length 2 in head from snout tip; teeth villiform, in broad bands on jaws, on vomer and palatines; interorbital $5\frac{1}{8}$, low, level. Gill rakers $5 + 13$, of which 4 or 5 above and below rudiments; length $1\frac{1}{4}$ in gill filaments, which $1\frac{7}{8}$ in eye. Pair of nasal spines; no antero-supraorbital spine, pair of low postero-supraorbitals; long occipital keel ends in small spine each side; strong supra-scapular spine, also with advanced

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higher spine; very low, broad,
obsolete preorbital spine on
lower edge; 5 preopercular
spines; 2 small, wide set
opercular spines, upper little
posterior.

Scales 72 or 73 + 4 or 5 close
along and above lateral line;
tubular scales 40 or 41 + 1 or 2 in
lateral line; 14 or 15 scales above,
21 below, 48 predorsal forward
to nostrils; 20 + 3 or 4 on cheek.

Few very small scales on
maxillary expansion. Fins basally
with small scales. Scales with
7 to 10 basal radiating striae;
32 or 33 apical denticles, with 8
to 10 transverse series of basal
elements; circuli fine.

D. XIII, 12 to 14, fourth spine
 $2\frac{1}{2}$ to $2\frac{3}{4}$ in total head length,
fourth ray $2\frac{2}{5}$ to $2\frac{1}{2}$; 1A.

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III, 6, I, second spine $2\frac{4}{5}$ to $2\frac{7}{8}$,
second ray $2\frac{1}{10}$ to $2\frac{1}{5}$; caudal
 $1\frac{2}{3}$ to $1\frac{4}{5}$, convex behind;
least depth of caudal peduncle
 $3\frac{1}{3}$ to $4\frac{1}{5}$; pectoral $1\frac{2}{5}$ to $1\frac{1}{2}$,
rays I, 7, IX; ventral rays I, 5,
fin $1\frac{1}{2}$ to $1\frac{9}{10}$ in total head
length.

Brown, little or scarcely
paler on under surfaces. Four
or 5 irregular, variable,
transverse, dark bands on
young; second and third on
trunk usually closer. Two
dark brown postocular bands,
lower more constricted, also
one from lower eye edge back
and parallel along upper
maxillary edge and short one
forward on preorbital. Lips
with dark spots. Fins pale
brown, all more or less

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spotted with dark brown. With age numerous dark spots appear and impart a greatly variegated and speckled appearance. Usually large dark blotch on pectoral basally.

Japan. Jordan and Starks allow Sebastes oblongus Günther as distinct from Sebastes mitzukurii Jordan and Evermann, as the type of the former had about 60 scales, counting about 58 to 60 series below the lateral line. In S. mitzukurii the count 42 to 46. I find 50 + 5 close along below lateral line.

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U. S. N. M., no. 49492. Yokohama.
Albatross Collection. September
1896. Length 96 mm.

U. S. N. M., no. 59706. Kagoshima.
H. M. Smith. Length 80 mm. to end
of broken caudal.

U. S. N. M., no. 71805. Tokyo.
Albatross Collection 1906. Length
162 to 183 mm. Two examples.

U. S. N. M., no. 71934. Shioyama,
Rikuzen, Japan. Albatross Collection
1906. Length 69 to 184 mm. Nine
examples.

U. S. N. M., one example (with
73858). Kobe, Japan. P. L. Jouy.
Length 47 mm.

U. S. N. M., one example (with
51320). Misaki, Japan. A. S. Jordan
and J. D. Snyder. Length 63 mm.

Sebastodes nigricans (Schmidt)

Sebastodes deutoementum nigricans
Schmidt, Trans. Pac. Comm. Acad.
 Sci. U. S. N. R., vol. 2, p. 97, ~~xxx~~ fig.
 13, 1931 (type locality, Nagasaki,
 Japan).

Depth 3; head $2\frac{2}{3}$. Snout 4 in
 head from snout tip; eye $4\frac{1}{8}$, $1\frac{1}{10}$
 in snout, greater than interorbital;
 maxillary reaches $\frac{3}{4}$ in orbit,
 expansion $1\frac{3}{5}$ in orbit, length
 $2\frac{1}{10}$ in head from snout tip;
 small sharp teeth in bands in
 jaws, on vomer and palatines,
 but none on symphysis of either
 jaw; interorbital 7, slightly
 convex. Gill rakers 6+14, short,
 blunt, upper and lower blunt,
 all with spinules.

Naso hexacanthus (Bleeker).

Prionon hexacanthus Bleeker, Nat. Tijds.
Indie, deel 8, 1855, p. (393) 421.

Ambonia. — Günther, Cat. Fish. Brit.
Mus., vol. 3, 1861, p. 355 (copied).

Callicanthus metopoxophrus jenkinsi,

Bull. U. S. Fish Comm., vol. 22, 1902 (1903),
p. 481, fig. 31. Honolulu. — Jordan and Evermann,
B.C., vol. 23, pt. 1, 1903 (1905), p. 405, fig. 178 (Honolulu).

Acanthurus tuberosus (non lacepede) Fowler,

Bishop Mus. Bull., no. 22, 1925, p. 28

(Honolulu).

Acanthurus metopoxophrus Fowler, Bishop

Mus. Bull., no. 22, 1925, p. 13 (Guam).

Naseus hexacanthus Steindachner, Abhandl.

Senckenberg. Gesell., band 25, 1900, p. 427

(Batjan).

Scales 40 in lateral line; tubular scales 32 in lateral line; 9 scales above, 15 below. Scales finely ctenoid. Scales very small on cheek, chest, breast, prepectoral region and fin bases. Lateral line nearly straight.

Nasal, preorbital, postorbital and occipital spines strong, and both preorbital and occipital forming ridges; preocular bone $\frac{1}{2}$ of eye, smooth anteriorly, with only 1 small triangular spine on lower hind edge, directed down and back; preopercle spines 5, equidistant; 2 lower ones blunt; opercle with 2 flat long spines, nearly reach hind border of opercular flap; triangular humeral and sharp nuchal spine.

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D. XIII, 13, sixth spine $2\frac{3}{4}$ in head, first spine $2\frac{1}{6}$; A. III, 7, second spine $2\frac{1}{3}$, second ray $1\frac{4}{5}$; caudal $1\frac{3}{4}$, truncate; least depth of caudal peduncle $3\frac{1}{10}$; pectoral $2\frac{1}{8}$, rays I, 7, XI; ventral I, 5, length $1\frac{3}{4}$ in head.

Dark brown, without markings, lighter on belly. Fins blackish brown. Length 181 mm. (Schmidt.)

Southern Japan.

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Sebastichthys pachycephalus Schlegel

Sebastes pachycephalus Schlegel,
Fauna Japonica, Poiss., pts. 2-4,
p. 47, pl. 20, fig. 3, 1843 (type
locality, Japan). — Richardson,
Ichth. China and Japan, p. 214,
1846 (Canton). — Günther, Cat.
Fish. Brit. Mus., vol. 2, p. 97,
1860 (Japan). — Steindachner and
Döderlein, Denks. Akad. Wiss. Wien,
Math.-naturw. Kl., vol. 49, pt. 1, p. 201,
1885 (Tokyo).

Sebastodes pachycephalus Steindachner,
Anz. k. k. Naturw. Wien, vol. 11, p. 202,
1896 (Kobe).

Sebastodes platycephalus Jordan and
Snyder, Annot. Zool. Japon., vol. 3, p.
97, 1902 (reference).

Acanthurus güntheri (non güntheri) Weber,¹⁰²⁶
Siboga Exped., band 65, 1913, p. 317.

Ambonia (de Günther 1861).

Hepatus weberi Ahl, Mitt. Zool. Mus.

Berlin, band 11, 1924, p. 37 (on Weber 1913).

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Sebastodes (Pteropodus) pachycephalus
Jordan and Hubbs, Mem. Carnegie
Mus., vol. 10, no. 2, p. 270, June 27,
1925 (Atami; Yokohama; Toyama).
— Schmidt, Trans. Pac. Comm.
Acad. Sci. USSR, vol. 2, p. 99,
1931 (Nagasaki; Fusan).

Sebastichthys pachycephalus

Jordan and Starks, Proc. U. S.

Nat. Mus., vol. 27, p. 117, 1904.

(Wakanoura, Kobe, Hiroshima,
Shimonoseki) — Tanaka, Figs.

Descript. Fishes of Japan, vol. 48.

p. 950, pl., 188 fig. 516, ~~1930~~, pl. 189, fig.

517, pl. 190, fig. 520, Aug. 28, 1930

(Wakayama)

— Izuka and Matsuura, Cat. Zool.

Spec. Tokyo Mus., Vertebr., p. 129, 1920

(Tokyo Market)

— Jordan and Thompson, Mem. Carnegie

Mus., vol. 6, no. 4, p. 273, Sep. 1914

(Misaki).

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Depth $2\frac{1}{2}$ to $2\frac{7}{5}$; head $2\frac{2}{5}$ to $2\frac{1}{2}$, width $1\frac{2}{5}$ to 2. Snout $3\frac{3}{4}$ to $3\frac{7}{8}$ in head from snout tip; eye $3\frac{1}{4}$ to $5\frac{1}{4}$, greater than snout in young to 2 in snout with age, twice interorbital in young to subequal with age; maxillary reaches $\frac{3}{5}$ in eye in young, to hind eye edge with age, expansion $1\frac{2}{3}$ in eye, length 2 to $2\frac{1}{10}$ in head; teeth in villiform bands in jaws, on vomer and palatines; interorbital $5\frac{3}{4}$ to 6, low or depressed, level medially. Gill rakers 6 + 15, of which 5 above and 7 below rudimentary bands; robust, blunt, $\frac{1}{2}$ of gill filaments, which $1\frac{3}{5}$ in eye. Snout of strong nasal spine, 3 strong, supraperiorital spine and patch on occiput with long hairs; suprascapular spine present, and forward above another strong spine; 2 broad,

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short, wide set preorbital spines;
5 broad, short, preopercle spines.

Scales 49 or 50 + 4 close along
above lateral line; tubular
scales 32 or 33 + 1 in lateral
line; 13 scales above, 18 below,
28 to 30 predorsal, forward over
nostrils; 16 to 18 scales obliquely
from lower eye edge to angle of
preopercle ridge. Maxillary with
very fine or small irregular
scales. Fins finely scaled basally.
Scales with 9 to 11 basal radiating
striae; 12 to 67 slender apical
denticles, with none to 8 transverse
series of basal elements; circuli
fine.

D. XIII, 13, third spine $3\frac{1}{5}$ in
total head length, third ray 2 to
 $2\frac{1}{5}$; A. III, 7, I or 6, I, second spine
 $2\frac{7}{8}$ to $3\frac{1}{8}$, second ray 2; caudal
 $1\frac{7}{8}$, convex behind; least depth

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of caudal peduncle $3\frac{1}{4}$ to $3\frac{1}{2}$; pectoral
 $1\frac{1}{5}$ to $1\frac{2}{5}$, rays I, 7, II; ventral
I, 5, fin $1\frac{2}{3}$ to 2 .

Variably dark brown above,
finely speckled or variegated
with darker to blackish-brown.
Lower surfaces paler, usually quite
immaculate. Sometimes variegated
with 4 dark transverse bands, which
may be broken into coarse reticula-
tions, and pale areas may even be
marked with white spots in
varying numbers, often several
along bases of dorsals in each
dark band. Very young often
with 2 dark or blackish brown
bands from lower eye edge
obliquely across cheek and 2
more horizontal ones may occur
in postocular region. Broad
black band in young may extend
from spinous dorsal and include

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most all of trunk, another may
connect soft dorsal and anal,
and a third cross caudal
peduncle close on caudal base.
Fins all more or less spotted
with dark to blackish brown,
with age spots becoming quite
small and numerous. Ventral
usually dusky or blackish
terminally and spots obscure.

China, Japan.

U. S. N. M., No. 49470. Tokio. 696
Albatross Collection. K. Otaki.
Length 115 mm.

U. S. N. M., No. 51235. Wakanoura.
D. S. Jordan and J. O. Snyder.
Length 218 mm.

U. S. N. M., No. 51265. Misaki.
D. S. Jordan and J. O. Snyder.
Length 205 to 248 mm. Two examples.

U. S. N. M., No. 51276. Tokyo.
D. S. Jordan and J. O. Snyder.
Length 168 mm.

U. S. N. M., No. 51300. Kobe.
D. S. Jordan and J. O. Snyder. Length
136 to 175 mm. Two examples.

U. S. N. M., No. 51352. Japan.
D. S. Jordan and J. O. Snyder.
Length 158 mm.

U. S. N. M., No. 57498. Yokohama.
P. L. Jouy. Length 178 mm.

U. S. N. M., no. 71014. Otoro,
Hokkaido. Albatross Collection 1906.
Length 120 mm.

U. S. N. M., no. 71689. Habodate.
Albatross Collection. Length 132 to
145 mm. Four examples.

U. S. N. M., no. 71730. Rikawa,
Rikuzen, Japan. Albatross Collection
1906. Length 127 to 166 mm.
Five examples.

U. S. N. M., no. 71806. Tokio.
Albatross Collection 1906. Length
170 to 203 mm. Two examples.

U. S. N. M., no. 71953. Misaki.
Albatross Collection 1906. Length 47 to
133 mm. Five examples.

U. S. N. M., no. 72102. Otaru.
Albatross Collection. Length 230 mm.

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^{ichthys}
Sebastodes capensis (Gmelin)

Scorpaena capensis Gmelin, Syst.
Nat. Linn., vol. 3, p. 1219, 1789 (type
locality, Cape of Good Hope). —
Walbaum, Arted. Pisc., vol. 3, p.
383, 1792 (copied).

Sebastes capensis Cuvier, Hist. Nat.
Pois., vol. 4, p. 341, 1829 (Cape of
Good Hope). — Duoy and Guimard,
Voy. Astrolabe, Zool., vol. 3, p. 690, pl.
11, fig. 3, 1834 (Cape of Good Hope). —
A. Smith, Illustr. Zool. South Africa,
no pagination, pl. 22, fig. 1, 1849
(Cape Town). — Pappe, Synop. Edible
Fishes of South Africa, p. 14, 1853

Depth $2 \frac{1}{2}$ to $2 \frac{2}{3}$; head $3 \frac{4}{5}$ to $3 \frac{7}{8}$, width 2 to $2 \frac{1}{5}$. Snout $1 \frac{2}{5}$; eye $3 \frac{3}{4}$ to $4 \frac{4}{5}$, $2 \frac{2}{3}$ to $3 \frac{1}{4}$ in snout, $1 \frac{1}{5}$ to $1 \frac{3}{5}$ in interorbital; teeth 40 to 42, 50 to 54 with age, small, compressed, pointed, minutely serrate; maxillary 4 to $4 \frac{1}{8}$ in head; interorbital 3, broadly convex. Gill rakers $4 + 9$, short, conic, robust.

Skin minutely asperous, velvety to touch; asperities little larger in smallest example.

D. V, 24, f or 25, f, first spine $2 \frac{1}{8}$ to $2 \frac{1}{2}$ in head, first ray $2 \frac{3}{5}$ to $2 \frac{2}{3}$; A. II, 23, f, second spine $3 \frac{1}{5}$ to $3 \frac{7}{8}$, first ray $3 \frac{1}{8}$ to $3 \frac{1}{5}$; caudal emarginate or lunate, with age upper lobe produced in moderate filament, $2 \frac{4}{5}$ to $3 \frac{1}{3}$ in combined head and body; least depth of caudal peduncle 5 to $5 \frac{1}{8}$ in head; pectoral $1 \frac{3}{5}$ to $1 \frac{2}{3}$; ventral $1 \frac{9}{10}$ to $2 \frac{1}{8}$; caudal peduncle with 2 bony bucklers, each with broad keel, anterior larger or $5 \frac{1}{3}$ to $5 \frac{2}{3}$.

Largely uniform brown. Iris light brown. Soft dorsal and anal each with 3 longitudinal blackish brown bands, rest of fins together with spinous fins dull brown; edges of soft dorsal and anal ~~variously~~ narrowly whitish. Caudal brown like body, hind edge very narrowly whitish. Paired fins brown, hind pectoral edge rather broadly pale brown.

(Table Bay).

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— Günther, Cat. Fish. Brit. Mus.,
vol. 2, p. 96, 1861 (Cape of Good Hope).

— Bleeker, Nat. Tijds. Ned. Indië,
vol. 21, p. 52, 1860 (reference). —
Castelnau, Mém. Poiss. Afrique,
p. 6, 1861 (Cape of Good Hope).

— Gil Steindachner, Sitzb. Akad.
Wiss. Wien, math.-naturh. Kl.,
vol. 83, p. 216, 1881 (Cape Town,
Port Elizabeth, Dyreque, Chili).

— Gilchrist, Marine Investig. South
Africa, vol. 1, p. 118, 1902 (reference).

Sebastodes capensis Jordan and Evermann,
Bull. U. S. Nat. Mus., No. 47, pt. 2, p. 1833,
1898 (reference).

Naso tapeinoma (Bleeker).

Naseus tapeinoma Bleeker, Nat. Tijds.

Ned. Indië, deel 6, 1854, p. 457. Amboina.

— Bleeker, Verh. Soc. Sci. Ind. Néerl.,
vol. 2, no. 7, 1857, p. 5 (Amboina). —

Bleeker, Ned. Tijds. Dierk., deel 1, 1863,
p. 264 (Atapupu, Timor). — Weber,

Siboga Exped., bund 65, 1913, p. 321
(Manado and Banda).

Prionon tapeinosoma Bleeker, Nat. Tijds.

Ned. Indië, deel 6, 1854, p. 494 (Amboina).

Sebastichthys capensis Barnard,
Ann. South African Mus., vol. 21, pt.
2, p. 908, Oct. 1927 (Table Bay,
Saldanha Bay, Tristan d'Acunha,
Gough Island, 40 to 150 fathoms).

Laso vomer (Klunzinger).

Laseus vomer Klunzinger, Verh. Zool.
bot. Ges. Wien, band 21, 1871, p. 514.

Red Sea.

Laseus (trispinatus) vomer Klunzinger,
Fisch. Roth. Meer., 1884, n. 87, plate 13,
fig. 2 (types).

Depth 3; head 4. Snout $1\frac{4}{5}$ in head;
eye $5\frac{3}{4}$. D. VI, 26 to 28; A. II, 27 or 28.
Tail with 2 beeled bucklers each
side. Brown to mouse gray. Belly
gray yellow. Gill opening dusky.
Dorsal mottly yellow with violet
streaks. Caudal yellowish and violet,
bucklers dirty violet or brownish red.
Anal and ventral yellow. Length 540
mm. (Klunzinger.)

Scorpaena africana Lacépède, Hist.
Nat. Poiss., vol. 3, pp. 258, 266, 1802
(type locality, Cape of Good Hope).

Sebastes maculatus (not)
A. Smith, Illustr. Zool. South Africa,
no pagination, pl. 22, fig. 2, 1849
(Cape of Good Hope).

Perca afra Gray, Cat. Fish of Gronow,
p. 113, 1854 (type locality, Cape of
Good Hope).

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narrowly gray to whitish, though obscurely
so. Caudal ~~obscurely~~ brownish like
general body-color, with obscure
brown spots like those on body.
Pectoral brown, hind border rather
broadly paler brown. Ventral light
grayish on membranes, terminally each
with deep gray streak, rays and
spine brown.

~~Type~~ 5937. Vahatua Island, Philippines.
November 8, 1908. Length 355 mm.

~~A~~ ~~only the type known~~. This species is
unique in its lack of frontal horn or
hump, elongated fusiform body, large
eye and obscurely spotted coloration.

It is previously only known from
Klunzinger's description and figure
of examples from the Red Sea. From
this we have compiled the following:
J

Depth 3; head $2\frac{1}{2}$. Snout subequal with eye; eye 4 to $4\frac{1}{4}$ in head; maxillary reaches $\frac{1}{2}$ in eye; knob at symphysis of lower jaw; interorbital space $\frac{2}{3}$ diameter of eye, concave, with 2 ridges. Lower gill rakers 20 to 22, not over $\frac{1}{2}$ of eye. Pair of nasal spines; supraorbital ridge with 1 anterior and 3 posterior spines; pair of occipital ridges, each ending posteriorly in a spine; 2 flat spines just above opercle, 2 on angle of opercle and 5 conic marginal preopercular spines.

Scales 60 to 70 along lateral line; pores 36 to 40 on lateral line. Numerous small, accessory scales mixed in with the larger ones on the body. Interorbital scaly,

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jaws naked. Bases of vertical
fins minutely scaly.

D. XIII, 13, or 14, third and
fourth spines longest or 3 to $3\frac{1}{2}$
in head; A. III, 6, second spine
strongest, about equals longest
dorsal spine; caudal truncate;
pectoral rays 8, VIII or IX.

Red, shading to orange below.
Several silvery white or pinkish
irregular spots on sides above
lateral line. Iris golden.

Fins red, membrane of spinous
dorsal mottled with brown.

Length to 400 mm. (Barnard.)

South Atlantic, South
Africa.

Sebastichthys elegans (Steindachner
and Döderlein).

Sebastes elegans (Döderlein) Steindachner
and Döderlein, Denks. Akad. Wiss.
Wien, math.-naturw. Kl., vol. 49, pt. 1,
p. 205, 1885 (type locality, Tagawa,
Inland Sea).

Sebastodes elegans Jordan and Evermann,
Bull. U. S. Nat. Mus., no. 47, pt. 2, p.
1830, 1898 (copied). — Jordan and
Snyder, Annot. Zool. Japon., vol. 3,
p. 98, 1901 (reference). — Jordan and
Starks, Proc. U. S. Nat. Mus., vol.
27, p. 118, fig. 6, 1904 (Misaki,
Anomichi, Miyajima).

black shoulder mark. More or less¹⁰³⁷
orange below caudal spine. Dorsal
and anal edged blue. Caudal with
very narrow pale edge behind.
Pectoral edge yellow.

6168 to 6171, 8882 and 20849. Mansalay.
June 4, 1908. Length 55 to 242 mm.
No black shoulder mark. Anal edge
blue. Pale bar at caudal base.
Pectoral sometimes yellowish terminally.
White bar on caudal.

8056 and 8057. Mompog Island,
Anabuyan Islands. March 3, 1909.
Length 275 to 278 mm.

6243 and 6244. Medio Island, Galera
Bay. June 9, 1908. Length 248 to 260 mm.

Sebastodes (Sebastocles) elegans
Jordan and Hubbs, Mem. Carnegie
Mus., vol. 10, no. 2, p. 270, June
27, 1925 (Misaki). — Schmidt,
Trans. Pac. Comm. Acad. Sci. U.S.R.,
vol. 2, p. 99, 1931 (Tokyo).

Sebastichthys elegans Franz, Abhandl.
Kon. Bayer. Akad. Wiss., vol. 4,
Suppl. Band 1, p. 71, 1910 (Aburatsubo).

[— Izuka and Matsuura, Cat. Zool. Spec.
Mus. Tokyo, Vertebr., p. 129, 1920

(Kochi, Tosa)
— Jordan and Thompson, Mem.
Carnegie Mus., vol. 6, no. 4, p. 273, Sep.
1914 (Idzu Sea; Yokohama; Shimoda).

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Dorsal with 1 or 2 dusky bars posteriorly, anal with 2 or 3, each fin with narrow purple edges. White band wide as pupil, contrasted, at caudal base.

8363. Malapascua Island. March 16, 1904. 2 examples, both 265 mm.

Very small dark blotch at upper angle of gill opening. Caudal spine with orange socket. Body striped. Both with white band at caudal base, not white in fork. Pectoral olive yellow at tip.

16619. Manbozor Kay, Bohol Island. March 26, 1909. Length 206 mm.

6167. Mansalay, Mindoro. June 4, 1908. Length 290 mm. No trace of

Depth $2\frac{3}{5}$ to $2\frac{7}{8}$; head $2\frac{2}{5}$ to $2\frac{2}{3}$, width $1\frac{7}{8}$ to 2. Snout 4 to $4\frac{1}{3}$ in head from snout tip; eye 4 to $4\frac{4}{5}$, 1 to $1\frac{1}{8}$ in snout, greatly exceeds interorbital; maxillary reaches $\frac{3}{4}$ to $\frac{1}{2}$ in eye, expansion $1\frac{3}{4}$ to 2 in eye, length 2 to $2\frac{1}{4}$ in head from snout tip; teeth finely villiform, in bands in jaws, on vomer and palatines; interorbital $5\frac{1}{2}$ to 7, concave. Gill rakers 6+15, rather robust, $2\frac{1}{3}$ in gill filaments which 2 in eye; 4 upper and 5 or 6 lower rudiments finely asperous tubercles. Pair of strong nasal spines; 1 antero-supraorbital spine and 2 postero-supraorbital; long keels to occipital pair of spines; 2 very broad, short, low spines on lower preorbital edge; 5 preopercle spines, strong; suprascapular spine strong,

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sometimes bifid, preceded by anterior elevated spine; 2 opercular spines, upper larger and little posterior.

Scales 39 or 40 + 4 or 5 close along above lateral line; 30 + 1 or 3 tubular scales in lateral line; 7 or 8 scales above, 14 below, 32 predorsal forward to nostrils of which only 8 or 9 forward to occipital spine. Snout, inclusive of maxillary, naked. Cheek with 10 to 11 scales obliquely down on cheek from lower eye edge to angle of preopercle ridge, and 2 or 3 more on flange. Fins with fine scales basally. Scales with 7 to 10 basal radiating striae; 33 to 41 slender apical denticles, with 6 or 7 transverse series of basal elements; circuli very fine.

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D. XIII or XIV, 12, fourth spine $2\frac{1}{6}$ to $2\frac{3}{4}$ in total head length, fourth ray $2\frac{1}{5}$ to $2\frac{2}{5}$; A. III, 6, I, second spine 2 to $2\frac{3}{4}$, second ray $1\frac{7}{8}$ to $2\frac{1}{6}$; caudal $1\frac{3}{4}$ to $1\frac{4}{5}$, hind edge convex; least depth of caudal peduncle $3\frac{1}{3}$ to $3\frac{1}{2}$; pectoral $1\frac{1}{3}$ to $1\frac{2}{5}$, rays I or II, 7, VIII or IX; ventral rays I, 5, fin $1\frac{2}{3}$ to 2 in total head length.

Brown, scarcely or but slightly paler on under surface of head and belly. Large blotches of lighter shades on trunk and tail, though in young forms about 4 transverse variable bands, which may be broken into various blotches and spots. Head also speckled and blotched or spotted with dark brown. On preorbital of young usually large dark blotch, often greatly larger one on

infraorbital and third postocular, besides one or two horizontal postocular streaks. Lips spotted. Iris gray, with dark spots in orbit. Four dark blotches of back more or less reflected on bases of dorsal fins, which otherwise with variable inclined and waved parallel streaks, made up of dark spots. Caudal spotted with brown, in young examples usually as transverse black band at outer half of fin, broken more or less at small spots. Anal with 4 dark broad transverse bands. Pectoral with 2 transverse bands made up of several spots on each ray. Ventral spotted with brown.

Japan. A handsome variegated species. As Jordan and Starks remarks it "may be separated from

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Sebastichthys pachycephalus (which it somewhat resembles), at a glance by the narrow, deep channel along middle of inter-orbital. The area between raised supraorbital rims in S. pachycephalus is wide and scaled over."

U. S. N. M., No. 51325. Japan.
D. S. Jordan and J. O. Snyder. Length 115 mm.

U. S. N. M., No. 51331. Japan.
D. S. Jordan and J. O. Snyder. Length 108 to 178 mm. Two examples.

U. S. N. M., No. 51373. Japan.
D. S. Jordan and J. O. Snyder. Length 195 mm.

U. S. N. M., No. 51344. Japan.
D. S. Jordan and J. O. Snyder. Length 123 to 152 mm. Three examples.

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U. S. N. M., no. 71795. Tokyo market.
Albatross Collection. Length 132 to
165 mm. Four examples.

U. S. N. M., no. 72013. Misaki.
Albatross Collection. Length 152 mm.

Genus Scorpaenodes Bleeker

Scorpaenodes Bleeker, Nat. Tijds.
Indie, vol. 13, p. 371, 1857. (Type
Scorpaena polylepis Bleeker,
orthotypic.)

Sebastopsis Gill, Proc. Acad. Nat.
Sci. Philadelphia, p. 278, 1862. (Type
Scorpaena polylepis Bleeker,
monotypic.)

Sebastella Tanaka, Zool. Magazine,
vol. 29, p. 10, 1918. (Type Sebastella
littoralis Tanaka, monotypic.)

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12649. Port Palapag. June 3, 1909.
Length 158 mm.

219 and 15646. Rapu Rapu Island.
June 22, 1909. Length 190 to 195 mm.

11264. Refugio Island, Pasacao,
Luzon. March 9, 1909. Length 212 mm.

A638. Simaluc Island. September 22,
1909. Length 225 mm.

A472. Tubulatan Island.
September 9, 1909. Length 232 mm.

7137 and 7138, 7175. West coast of
Palani Island. November 18, 1908.
Length 220 to 243 mm. Scarlet shades
anteriorly below. Very dark area across
opercle and somewhat above at angle,
left on fading. Terminal half of pectoral
and caudal tip orange.

Body elongately ovoid, compressed.
 Head large, compressed. Snout
 moderate or short, little inclined.
 Eye rather large, little premedian
 in head. Mouth rather large,
 lower jaw protruding. Maxillary
 extends below eye, expanded
 below. Teeth in jaws and on vomer,
 none on palatines. Branchiostegals
 7. ^{Armature of head well developed.} Scales variable, 35 to 70 in
 lateral series, present on head.
^{though groove or depression behind eye above.}
 No deep occipital pit, Filaments
 or flaps few or little developed.
 Lateral line distinct, complete,
 axial. Dorsal continuous, spinous
 fin usually lower than rayed fin
 though with larger base and
 spines 13. Anal with 3 short
 spines. Caudal rounded. Pectoral
 moderate. Ventral short.

Analysis of Species

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a.¹ Anal spines very short, only $\frac{1}{2}$ length of depressed fin at most; maxillary naked; scales 70. muiciparus.

a.² Anal spines short, only $\frac{2}{3}$ length of depressed fin at most.

b.¹ Maxillary scaleless; scales 35 to 37. guamensis.

b.² Maxillary scaly at all ages. parvipinnis.

a.³ Anal spines long and slender, $\frac{3}{4}$ to subequal with depressed fin; maxillary scaleless (rarely scaly); scales 42 to 48. scabra.

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Scorpaenodes muciparus (Alcock)

Sebastes muciparus Alcock, Journ.
Asiatic Soc. Bengal, vol. 58, pt. 2,
p. 298, pl. 22, fig. 3, 1889 (type
locality, Captured 26 miles north
by east of Golpalpur, in 45
fathoms); vol. 85, pt. 2, p. 312,
1896 (reference); Ill. Investigator,
Fishes, pt. 5, pl. 18, fig. 5, 1898. —

Weber, Siboga Exped., vol. 65, Fische,
p. 491, 1913 (Solor Straits).

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7288. Palawan Bay, Mindoro. December 11,
1908. Length 203 mm.

11131. Pasacao, Ragay Gulf, Luzon.
November 9, 1909. Length 173 mm.

13299. Pawatika Harbor, Malayan
Island. November 28, 1909. Length 193 mm.

10769 [1162], 10768, 22634, 22635. Port
Banalacan, Marinduque. February 23, 1909.
Length 175 to 225 mm. General color of
body and fins black. Dirty whitish
stripe under chin till over maxillary,
but not crossing snout. Small dirty
white spot on lower line of pectoral,
base of fin blackish, outer half orange.
Rich orange margin in crescent of
caudal.

Depth 3; head $2\frac{1}{3}$. Snout $3\frac{3}{4}$
in head from snout tip; eye $3\frac{3}{4}$,
subequal with snout, greatly
exceeds eye; maxillary reaches $\frac{7}{8}$
in eye, expansion $1\frac{3}{5}$, length
2 in head from snout tip;
villiform teeth in both jaws and
on very strongly projecting head
of vomer, none on palatines;
interorbital $\frac{1}{2}$ of eye, with median
groove.

Pair of upstanding nasal
spines; preorbital margin with
4 spiny points, and sharp, salient
supraorbital ridge with 4 large
reverted spines; 2 sharp reverted
~~ridges~~ spines, one behind the
other, in the occipital region,
and row of 3 in temporal region;
strong suborbital ridge with 6
similar spines; 4 sharp preopercular
spines, ^{2 opercular spines;} strong humeral spine.

Scales 70 in lateral line; lateral line at 22 double beel-like spines. Scales ctenoid, small, become very minute on head and abdomen. Maxillary naked, also muzzle. Pair of short nasal filaments; supra-orbital ridge with short supra-ocular filament below; rather long maxillary filament below front edge of eye; preopercle margin with short filament, a large muciferous canal, with several distant large circular openings, extends along free edge of preopercle and limb of lower jaw forward to symphysis.

D. XII, I, 9, third spine $3\frac{3}{4}$ in total head length, third ray $2\frac{3}{4}$; A. III, 5, third spine $3\frac{3}{4}$, third ray $2\frac{1}{5}$; caudal $1\frac{3}{5}$, convex behind; least depth of caudal peduncle $4\frac{1}{5}$.

pectoral $1\frac{2}{5}$, rays 19; ventral ⁷¹⁹
rays I, 5, fin 2 in total head.

Body and fins bright red.
Series of 4 transverse broad dark
bands across back and sides,
and irregular rows of dark red
and brown spots on fins. A
black blotch in hind part of
spinous dorsal. Length 93 mm.
(Alcock.)

India.

Scorpaenodes guamensis (Quoy and Gaimard)

Scorpaena guamensis Quoy and Gaimard, Voy. Uranie, Zool., p. 326, 1825 (type locality, Guam).

— Günther, Journ. Mus. Godeffroy, pts. 5-6, vol. 2-3, p. 74, pl. 56, fig. B, 1874 (Caroline Islands; Red Sea; Samoa; Tonga; Pelew Islands; Society Islands). — Schmeltz, Cat. Mus. Godeffroy, no. 6, p. 13, 1877 (Uaiao, Tonga Islands); no. 7, p. 43, 1879 (South Sea Islands). — Klunzinger, Verh. zool. bot. Gesell. Wien, vol. 20, p. , 1876 (Red Sea; Tahiti).

1062
19259. Busbus Point, Siasi Island.
September 20, 1909. Length 164 mm.

10965. Cagayanes Island. March 31, 1909.
Length 187 mm.

15444. Calangaman Island. March
16, 1909. Length 215 mm.

9239. Camp Overton, Mindanao. August
6, 1909. Length 235 mm.

5384 and 12837. Cebu market. April
6, 1908. Length 173 to 228 mm.

7792. Danawan Island and Si Amil
Island. September 27, 1909. Length 173 mm.

15846. Dupon Port, Leyte Island.
March 17, 1909. Length 220 mm.

17154. Malapascua Island. March 16,
1909. Length 205 mm.

— Boulenger, Ann. mag. nat. Hist.,
London, ser. 6, vol. 20, p. 373, 1897
(Rotuma). — Duncker and Mohr,
Mitteil. naturh. Mus. Hamburg,
vol. 44, p. 69, 1931 (St. Matthias,
Ekaliu, Frederick Wilhelm Harbor
and Kelana Harbor, New Guinea).

1232 and 8962, Alibijiban Island,
Ragay Gulf, Luzon. March 6, 1909. Length
222 to 238 mm. Orange brown appears
bright orange under ^{accidental} scales when latter
removed. Head without orange shades.
Small black blotch at upper angle of
gill opening, equally on opercle and
shoulder. Caudal spine with black
socket. White band under chin and
across end of maxillary. Dorsal and
anal slate black, orange under scaling.
Caudal similar but paler, produced
upper lobe and margin of fork bright
cadmium orange. Pectoral black
basally, orange terminally. Ventral with
obscure spots, seen by transmitted
light.

Sebastopsis guamensis Streets, Bull.
 U. S. Nat. Mus., no. 7, p. 76, 1877
 (Samoa). — Fowler, Proc. Acad.
 Nat. Sci. Philadelphia, p. 521,
 1900 (Tahiti). — Jordan and Seale,
 Bull. Bur. Fisher., vol. 25, p. 374,
 1905 (1906) (Apia). — Jordan and
 Bull. Bur. Fisher., vol. 27, p. 51, 1907 (1908) (Calayan);
Richardson, Philippine Journ. Sci.,
 vol. , p. 51, 1910 (copied). — McCulloch,
McCulloch, Rec. Austral. Mus., vol. 9,
 p. 388, 1913 (Samoa, New Hebrides,
 Tongatabu, Bougainville Island,
 Duke of York Island). — Fowler
 and Silvester, Marine Pap. Carnegie
 Inst., p. 124, 1922 (Pago Pago). —
 — Fowler, Bull. Bishop Mus., no. 22,
 pp. 11, 33, 37, 1925 (Guam, Samoa, Tahiti).

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usually with narrow dusky margin
to groove.

Known only from the following series
obtained at the Philippines.

The species is known by the blackish
band around the gill opening, besides
the pale crescent across the chin.

Günther describes Bennett's type as blue,
head black, chest and ring encircling
lower part of mouth white, caudal with
2 black crescents of which 1 across base
and the other marginal and both
united by upper and lower edges of
fin. There is little doubt but that it
applies to Acanthurus celebesus Bleeker,
which has a similar pattern of coloration.
As Günther thought Acanthurus fuscus
Steindachner is ~~an~~ another synonym,
evidently the adult.

— Tanaka, Figs. Descript. Fishes⁷²³
of Japan, pts. 42-45, p.
1928.

Sebastes (Sebastes) quamensis
Klunzinger, Fische Roth. Meer., vol. 1,
p. 72, 1884 (Red Sea). — Beaufort,
Bijdr. Dierk. Amsterdam, vol. 19, p.
149, 1913 (Saonek, New Guinea).

Sebastes quamensis Weber, Siboga
Fische,
Exped., vol. 65, p. 490, 1913 (Sumba,
Borneo, Banka, Celebes, Sulu,
Karkaralang, Karakelang, Salibabu,
Obi major, Damar, Gisser, Sula-Besi,
Saleyer, Amboina, Tiur, Timor,
Samar).

~~*Hepatus melanobranchialis* new species.~~

Depth $1\frac{4}{5}$ to 2; head $3\frac{2}{5}$ to $3\frac{2}{3}$, width $1\frac{7}{8}$ to 2, snout $1\frac{1}{3}$ to $1\frac{2}{5}$; eye $3\frac{2}{3}$ to $4\frac{1}{8}$, $2\frac{4}{5}$ to 3 in snout, $1\frac{1}{5}$ to $1\frac{1}{4}$ in interorbital; teeth 14 to 18 in each jaw; maxillary 4 to $4\frac{1}{2}$ in head; interorbital 3 to $3\frac{1}{8}$; broadly convex; ^{few oblique grooves on opercle and preopercle flange.} gill rakers 9 + 12, short, feeble, cuneate points.

scales large, narrowly subrectate, with minute circuli; apical denticles 37 to 49, with 5 or 6 series transversely of low basal cusps.

d. IX, 28 or 29, ninth spine $1\frac{3}{5}$ to $1\frac{2}{3}$ in head, fifth ray $1\frac{1}{4}$ to $1\frac{1}{3}$; a. III, 26 or 27, third spine $1\frac{7}{8}$ to 2, fifth ray $1\frac{2}{3}$ to $1\frac{1}{2}$; caudal deeply bifurcate, with long slender, attenuated points, $1\frac{3}{4}$ to $2\frac{1}{2}$ in combined head and body; least depth of caudal peduncle $2\frac{1}{5}$ to $2\frac{1}{4}$ in head; pectoral 3 to $3\frac{1}{8}$ in combined head and body; ventral 1 to $1\frac{1}{10}$ ^{in head}; caudal spine $3\frac{1}{4}$ to $5\frac{1}{4}$.

Chocolate to amber brown generally. Iris deep brown. Edge of gill-opening blackish-brown broadly, extension down across lower chin. Lips dusky, and lower with rather broad creamy crescent. Nostril in a small pale or creamy spot. Hind caudal edge narrowly pale or grayish-white. Pectoral more or less gray & brown over greater terminal area. Ventrals or dusky basally. Fins otherwise largely dusky & brown. Caudal spine

Sebastapistes guamensis Seale, Occas.

Cop. Bishop Mus., vol. 4, no. 1, p. 80, 1906 (Tahiti; Rukuhiva; Fate, Shortland Island).

Scorpaenodes guamensis Fowler, Proc. Acad. Nat. Sci. Philadelphia, vol.

79, p. 288, 1927 (Philippines; Padang; Mem. Bishop Mus., vol. 10, p. 289, 1928

(Tahiti, Apia, Pago Pago, Shortland Island, Fate, Tahiti, Guam, Samoa); vol. 11, no. 5, p. 349, 1931 (Suva).

vol. 11, no. 6, p. 429, 1934 (Samoa; New Hebrides, Duke of York Island, Tongatabu, Bougainville Island, Ysabe in Solomons). — Herre, Fishes of

Philippine Exped., p. 65, 1931 (1934)

(Masugbu, Culion, Sitanki.

— Tanaka, Journ. Fac. Sci. Univ. Tokyo, sect. 4 Zool., vol. 3, pt. 1, p. 36, no. 4, 1931 (reference). — Fowler, l.c.,

Solomon Islands, Tahiti).

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Hepatus celebicus Jordan and Seale, Bull.

Bur. Fisher, vol. 26, 1906 (1907), p. 30 (Manila).

— Evermann and Seale, l.c., p. 97 (Bulan).

— Seale and Bean, Proc. U. S. Nat. Mus.,

vol. 33, 1907, p. 247 (Zamboanga). — Fowler,

Copeia, no. 58, June 18, 1918, p. 64 (Philippines).

Acanthurus fuscus Steindachner, Verh.

zool. bot. Ges. Wien, band 2, 1861, p. 176,

fig. 2. Ambonia. — Günther, Cat. Fish. Brit.

Mus., vol. 3, 1861, p. 339 (copied).

? Scorpaena rawakensis Dun and
Gaimard, Voy. Uranie, Zool., p. 325,
 1824 type locality, Rawak, (Guinea).

Scorpaena rubro-punctata Ehrenberg
Cuvier, Hist. nat. Poiss., vol. 4, p. 324,
 1829 (type locality, Massuah, Red Sea).

Sebastes minutus Cuvier, Hist. nat.
 Poiss., vol. 4, p. 348, 1829 (type locality,
 Moluccas; Marianas; Society
 Islands). — Günther, Cat. Fish.
 Brit. Mus., vol. 2, p. 106, 1860

(copied).
Sebastichthys minutus Bleeker, Verh. Kon. Akad. Wet.
 Amsterdam, vol. 16, 20.22, p. 20, 1876 (copied).

Scorpaena chiloprusta Rüppell,
 Neue Wirbelth., Fische, p. 107, pl. 27,
 fig. 3, 1839 (type locality, Red Sea).
 — Günther, Cat. Fish. Brit. Mus.,
 vol. 2, p. 121, 1860 (copied).

Hepatus leucosternon (Bennett). ^{Comm.}

Acanthurus leucosternon Bennett, Proc. Zool. Soc.

London, 1832, p. 183. Ceylon. — Bleeker, Nat.

Tijds. Ned. Indie, deel 3, 1852, p. (740) 761.

(Macassar), deel 10, 1856, p. 360 (Ternate).

12, 1856, p. (230) 273 (Batu Island). —

Günther, Cat. Fish. Brit. Mus., vol. 3, 1861,

p. 340 (type). ^{Valenciennes, Règne An. Cur. Ill. Poiss; 1839,}
^{p. 71, fig. 1 (Moluccas). —}

Acanthurus delisianus Guerin, l.c., pl. 35, fig. 2.

Acanthurus delisianus Valenciennes, Hist. Nat.

Poiss., vol. 10, 1835, p. 141. Mauritius. ~~Guerin~~,

~~Demoy. Poiss., 1844, plate 35, fig. 2.~~ —

Bleeker, Verh. Batav. Genoot. (Nal. Ichth.

Bengal), deel 25, 1853, p. 48.

Acanthurus delisianus Guerin, Demoy. Poiss., vol. 3, 1844, p. 22 (Mauritius)

Acanthurus celebicus Bleeker, Nat. Tijds.

Ned. Indie, deel 3, 1852, p. (740) 761. Macassar;

deel 10, 1856, p. 360 (Ternate). — Günther,

Cat. Fish. Brit. Mus., vol. 3, 1861, p. 339 (copied).

— Kner, ^{Reise.} Novara, Fische, 1865, p. 211 (Madras).

— Günther, Journ. Mus. Godeffroy, band 4,

1875, p. 115, plate 73, fig. B (Celebes, Ternate,

Scorpaena polylepis Bleeker, Nat.
Tijds. Ned. Indie, vol. 2, p. 173, 1851
(type locality, western Sumatra);
vol. 4, p. 92, 1853 (Amboina); vol. 8,
p. 306, 1855 (Batoe), p. 445 (Kokor-
Keeling); vol. 9, p. 284, 1855
(Manado, Celebes); vol. 10, p. 360,
1856 (Ternate); Aet. Soc. Sci. Ind.
Nedl., vol. 1, no. 3, p. 4, 1856 (Manado);
vol. 1, no. 5, p. 5, 1856 (Amboina);
Nat. Tijds. Ned. Indie, vol. 15, p.
199, 1858 (Goram). — Macleay,
Proc. Linn. Soc. New South Wales,
vol. 7, p. 248, 1882 (New Guinea).

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Hepatus aterrimus (Günther).

Acanthurus aterrimus Günther, Proc.
Zool. Soc. London, 1871, p. 660. Savay,
Samoa Islands. — Günther, Journ.
Mus. Godeffroy, band 4, 1875, p. 114,
plate 77, fig. 13 (type).

A small species, with depth about $1\frac{3}{5}$,
dark brown, with
chin bar, opercle edge and hind caudal
edge white. Günther's example was 89
mm. long.

Scorpaenichthys polylepis Bleeker,
 Ned. Tijds. Ned. Indie, vol. 8, p. 385,
 1856 (Kajeli, Buru); vol. 12, p. 230,
 1856 (Batu).

Scorpaenodes polylepis Bleeker, Nat.
 Tijds. Ned. Indie, vol. 12, p. 508,
 1856 (Wahai, Ceram); vol. 13, p.
 371, 1857 (Sangi); Act. Soc. Sci.
 Ind. Néerl., vol. 2, no. 7, p. 4, 1857
 (Amboina); vol. 3, no. 4, p. 2, 1857-
 58 (Manado).

Scorpaenoides polylepis Bleeker, Nat.
 Tijds. Ned. Indie, vol. 13, p. 56, 1857
 (Kajeli, Buru), p. 478 (Karangbolon,
 Java).

1055
with pale after fading. Dorsal stripes
less distinct than A 1434 and anal
stripes like those on dorsal. Caudal
when faded more or less marked
with pale purplish, band at caudal
base doubtless white in life, shows
sulphur under green slate general
coloration.

Scorpaenopsis polylepis Bleeker,
Nat. Tijds. Ned. Indië, vol. 18, p.
353, 1859 (Bawean); vol. 19, p.
331, 1859 (Pajitan, Java), ~~vol. 19~~ p.
333 (Karangbolong, Java); Act.
Soc. Sci. Ind. Néerl., no. 2, vol. 6,
p. 3, 1859 (1860) (Doreh, New Guinea);
Nat. Tijds. Ned. Indië, vol. 22, p.
90, 1860 (New Guinea).

fin sulphur yellow. Ventrals fade
olive terminally.

A 1434 and A 1476. Kait Point,
Libani Bay, Celebes. December 29, 1909.
Length 312 to 352 mm.

No. A 1434 with fine lines on body.
Side of head with spots. Well defined
shoulder blotch about 3 times long
as wide. Dorsal brown, with about
9 slaty bars equal to interspaces.
margin not distinctly blue. Anal
without distinct bars, edge blue.
Caudal with very narrow white
edge in fork. Pectoral bright yellow
in upper half of tip.

No. 1476. Shoulder blotch more or
less pointed behind, slightly outlined

Sebastes polylepis Günther, Cat.
Fish. Brit. Mus., vol. 2, p. 106, 1860
(Amboina; East Indies). — Schmeltz,
Cat. Mus. Godeffroy, no. 5, p. 25,
1874 (Kandavu; Samoa).

— Bleeker, Verslag. Kon. Akad.
Wet. Amsterdam, ser. 2, vol. 7,
p. 36, 1873 (Aru Islands).

— Pöhl, Cat. Mus. Godeffroy, no. 9, p. 29,
1884 (Samoa).

longer than orbit. Throat and breast slaty lavender fading to olive. Side of head brownish, with numerous, rather regularly disposed paler spots about size of number 6 or 8 shot. Dorsal alternately banded with olive brown and slate, bars of about equal width and somewhat anastomosing, slightly less in width than third of pupil, edge of fin dark. Anal similar, bands much less distinct and edge bluish. Caudal with distinct bands, quite dark, tip within fork very narrowly white. Pectoral slaty, membranes hyaline near tips of lower rays, tip of upper half of

Sebastopsis polylepis Bleeker, Arch.
Néerl. Sci. Nat., vol. 13, p. 37, 1876
(New Guinea); Verh. Kon. Akad.
Wet. Amsterdam, vol. 16, no. 2, p. 21,
pl. 4, fig. 2, 1876 (Sumatra, Batu,
Cocos, Java, Bawean, Celebes, Vangi,
Ternate, Buru, Cram, Ambona,
Goram, Aru). — Fowler, Journ.
Acad. Nat. Sci. Philadelphia,
ser. 2, vol. 12, p. 548, 1904 (Padang).

but pale ones very narrow. Side of head and nape with dark spots which fade to paler than ground color. Distinct yellowish white bar across caudal peduncle at caudal base. Dorsal and anal barred. Pectoral with yellow on upper tip.

A 1508. Bira Birahan Island, Borneo. December 31, 1909. Length 320 mm.

A 978 to A 980. Binang Mang Island, November 17, 1909. Length 260 to 305 mm. Deep dusky on side of body, narrow lines of blue slate, broader dark brown lines fading olive. Dash of black behind upper angle of gill opening, elliptical, somewhat narrower than pupil,

Sebastopsis erinacea Garman,
Bull. Mus. Comp. Zool., vol. 39, no. 8,
p. 231, pl. 1, fig. 2, 1903 (type
locality, Suva Reef, Viti Levu,
Fiji).

Sebastapistes strongensis (not
Cuvier) Seale, Occas. Pap. Bishop
Mus., vol. 4, no. 1, p. 80, 1906
(Fate).

Sebastella littoralis Tanaka, Zool.
Mag., vol. 29, p. 10, 1918 (type locality,
Mikaki). — Jordan and Hubbs,
Mem. Carnegie Mus., vol. 10, no. 2, p.
271, June 27, 1925 (translation).

4 Scorpaenodes littoralis

Side of head with more or less
obscure, hexagonal, paler spots,
size of number 8 shot. Dorsal
barred alternately with yellowish
umber and slaty, stripes about $\frac{1}{4}$
eye diameter. Similar, but very
much obscured stripes on anal
and fin edge narrowly blue. Inside
of caudal fork narrowly white edged.
Pectoral with bright yellow spot
on terminal third of second to sixth
rays.

6929, 6965, 6971. West coast of Sabtan
Island. November 8, 1908. Length 278 to
335 mm. Black shoulder mark
distinct. Alternate yellowish and
darker stripes distinct on body,

Depth $2\frac{2}{3}$ to $3\frac{1}{5}$; head $2\frac{1}{5}$ to $2\frac{1}{3}$, width $1\frac{4}{5}$ to 2. Snout $3\frac{2}{3}$ to $4\frac{1}{8}$ in head from snout tip; eye 3 to 5; maxillary $\frac{2}{3}$ to $\frac{4}{5}$ in eye, expansion 1 to $1\frac{1}{4}$ in eye, length 2 to $2\frac{1}{8}$ in head; teeth in villiform bands in jaws and on vomer, none on palatines; interorbital 8 to $8\frac{1}{2}$, deeply concave. Gill rakers 4 + 9, low tubercles. One slender spine over each nostril; 3 supraorbital spines, large one posteriorly above and 2 occipital; 1 small postocular, followed by 2 large ones above opercle and final large supra-scapular; one lower, flat, broad preorbital spine; 5 on suborbital stay, of which last 2 together at preopercle angle, also 2 lower marginal preopercle spines;

733

2 strong opercle spines and one above pectoral base.

Scales 30 to 32 + 5 in lateral line; tubes 20 to 23 + 1 or 2 in lateral line; 6 or 7 scales above lateral line to soft dorsal, 10 or 11 below, 15 predorsal.

Muzzle naked. Supraorbital flaps 2, posterior half of eye. Scales with 10 or 11 basal radiating striae; 54 to 64 apical denticles, with 2 or 3 transverse rows of basal elements; circuli fine.

D. XIII, 8, I, seventh spine $2\frac{4}{5}$ to 3 in total head length, third ray $2\frac{1}{8}$ to $2\frac{1}{4}$; A. IV, 5, I, second spine $1\frac{7}{8}$ to 2, second ray $1\frac{7}{8}$ to 2; caudal $1\frac{1}{2}$ to $1\frac{3}{4}$, rounded; least depth of caudal peduncle $4\frac{1}{8}$ to $4\frac{1}{2}$; pectoral $1\frac{1}{5}$ to $1\frac{2}{5}$;

ventral $1\frac{2}{3}$ to $1\frac{3}{4}$.

Brown, mottled darker, markings as fine dark cross bands on fins. Iris gray. Head below clouded brown. Spinous dorsal dark brown.

Red Sea, Cocos - Keeling Islands, East Indies, Philippines, Melanesia, Micronesia, Polynesia, ^{Rin Kiu,} Hawaii.

This species does not appear to be common in our collections and seems to be distinguished chiefly by its naked maxillary in combination with its shorter anal spines, these not over $\frac{2}{3}$ the length of the depressed anal fin at most.

11613. Sabayan, Mindoro. December 12, 1908. Length 48 mm.

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U. S. N. M., No. 51161. Hawaiian
Islands. U. S. Fish Comm. Length
45 mm.

U. S. N. M., No. 52293. Apia,
Samoa. Bureau of Fisheries.
Length 24 to 115 mm. Four examples.

U. S. N. M., No. 71611. Rapa,
Okinawa. Albatross Collection 1906.
Length 20 to 120 mm. 13 examples.

A. N. S. P., two examples. Philippines.
Commercial Museum of Philadelphia.
Length 50 to 57 mm.

A. N. S. P., four examples. Padang,
Sumatra. A. C. Harrison and H. L.
Hiller. Length 52 to 92 mm.

Scorpaenodes parvipinnis (Garrett)

Scorpaena parvipinnis Garrett,
Proc. Cal. Acad. Sci., p. 105, 1863
(type locality, Sandwich Islands).

— Günther, Journ. Mus. Godeffroy,
vols. 2-3, pts. 5-6, p. 75, pl. 52,
fig. D, 1875 (Hawaii; Raiatea).

Sebastopis parvipennis Seale,
Occas. Pap. Bishop Mus., vol. 1,
no. 5, p. 20, 1902 (Honolulu).

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8984. Raper Raper Island and Strait.
June 22, 1909. Length 255 mm. Brown
with longitudinal pale lines. Head
with pale spots. Oblong blotch on
shoulder twice wide as long, width
about equals pupil. Dorsal and
anal apparently without blue edges,
fins with many dark bars, about 8
on dorsal. Caudal narrowly white at
tip and in fork, white bar at base
of fin. Pectoral yellow at upper
tip.

6897 and 6898. Santo Domingo, Batan
Island. November 7, 1908. Length 300
to 318 mm. Umber, with numerous
narrow, slaty blue stripes; body
becomes yellowish on fading.

Sebastopsis parvipinnis Snyder,
Bull. U. S. Fish Comm., vol. 22, p.
535, 1902 (1904) (Honolulu). —

Jordan and Seale, Bull. Bur.
Fisher., vol. 25, p. 374, 1905 (copied).

Scorpaenodes parvipinnis Fowler,
Mem. Bishop Mus., vol. 10, p. 290,
1928 (Hawaiian Islands, Honolulu,
Laie, Honoumuni).

1049

Ventral slaty, becomes yellowish at tip.

8862. Duet Point. June 15, 1909.

Length 215 mm.

A 1083. Waitara Island. November 26, 1909.

Length 322 mm.

7044. Port San Pio Suinto, Camiguin

Island. November 11, 1908. Length 263 mm.

General color brownish, ^{lines on body distinct.} oblong seal brown shoulder spot, yellowish anteriorly at angle of gill opening. Distinct whitish bar across tip of caudal peduncle. Head with numerous pale spots. Dorsal and anal with alternate slaty and yellowish bars. Terminal upper half of pectoral yellow.

Sebustopsis belloggi Jenkins, Bull.
U. S. Fish Comm., vol. 22, p. 492,
fig. 37, 1902 (Sep. 23, 1903) (type
locality, Honolulu). — Snyder,
Bull. U. S. Fish Comm., vol. 22, p.
535, 1902 (Jan. 19, 1904) (Honolulu).
— Jordan and Seale, Bull. Bur.
Fisher., vol. 25, p. 374, 1905 (Hawaii).
— Jordan and Evermann, Bull. Bur.
Fisher., vol. 23, pt. 1, p. 462, fig.
202 (copied), 1903 (1905) (type;
Waikiki; Hilo; Honolulu). —
Borodin, Bull. Vanderbilt Marine
Mus., vol. 1, art. 2, p. 59, 1930
(Pearl Harbor, Oahu).

stripe which appears as fish fades.

Forward part of breast washed with olive yellow, less distinctly on rest of breast. Caudal spine with black socket. Purplish stripe on dorsal base on fading, fin with alternate slaty or yellow ochre bars, 8 or 9 of yellow.

Fins dusky olive at margin, probably wholly so in life. Anal similar, but bars less pronounced and of smaller width. Caudal plain slaty, very narrowly tipped with white in fork and lemon yellow or whitish bar at caudal base, wider above where about $\frac{2}{3}$ diameter of eye. Pectoral slaty, bright yellow blotch on terminal third of second to sixth or seventh rays.

Scorpaenodes kelloggi Jordan and
Jordan, Mem. Carnegie Mus., vol.
10, no. 1, p. 54, Dec. 1922 (Hawaii).
— Fowler, Mem. Bishop Mus.,
vol. 10, p. 290, 1928 (type); vol. 11,
no. 6, p. 430, 1934 (reference).

8922. Atulayan Island, Laganoy Gulf,
Luzon. June 18, 1909. Length 340 mm.
General color slaty or brown, resolving on
fading into narrow slaty lines divided
by narrower yellow interspaces; these
yellow dividing lines become obsolete on
breast and side below pectoral. Head
dark brown or fading to slate gray,
side and nape covered with small,
round, pale, yellowish white spots,
about $\frac{1}{4}$ of pupil and probably
bright yellow at times. Dark blotch
behind angle of gill opening, little
larger than eye diameter and about
half wide as long, placed back from
gill opening space equal to pupil.
From forward end to eye yellow-

Depth $2\frac{2}{5}$ to $2\frac{4}{5}$; head $2\frac{1}{6}$ to $2\frac{2}{5}$, width $1\frac{2}{3}$ to $1\frac{4}{5}$. Snout $3\frac{3}{4}$ to $4\frac{1}{8}$ in head from snout tip; eye 3 to $3\frac{3}{4}$, little greater than snout to subequal, greatly exceeds inter-orbital; teeth villiform, in bands in jaws, on vomer, but none on palatines; maxillary reaches $\frac{3}{4}$ in eye or opposite hind eye edge, expansion $1\frac{1}{3}$ to $1\frac{2}{3}$ in eye, length $1\frac{2}{3}$ to 2 in head measured from upper jaw tip; interorbital $5\frac{1}{4}$ to 6, deeply concave. Gill rakers 4 + 6, several of upper rudiments.

Small nasal spine; 1 ^{antero-}supra-orbital and 2 postero-supraorbital spines; pair of coronal, parietal and nuchal spines; 2 postocular spines, followed by suprascapular spine; ridge of suborbital stay with 3 spines and final pair of

small spines; preopercle with 5 spines, of which uppermost may be small, also second similar and close set with it; 2 opercular spines opposite; small humeral spine.

Scales 35 to 40 close along lateral line to caudal base and 3 or 4 more on latter; pores 22 or 23 + 1 in lateral line; 7 above to soft dorsal origin, 10 to 12 below; 38 to 48 predorsal. Head scaly, except muzzle and maxillary. Pectoral and caudal bases scaly. Short antero-supraorbital, and little longer postero-supraorbital flap, latter about half of orbit. Scales with 7 basal radiating striae; 20 to 24 rather long apical

denticles; circuli fine.

D. XIII, 9 or 10, fifth spine $3\frac{1}{2}$ to $3\frac{7}{8}$ in total head length, second ray $2\frac{7}{8}$ to 3; A. III, 5, I, second spine 2 to $2\frac{3}{5}$, third ray 2; caudal $1\frac{3}{5}$ to $1\frac{2}{3}$, convex behind; least depth of caudal peduncle $3\frac{1}{8}$ to $3\frac{1}{4}$; pectoral $1\frac{1}{3}$ to $1\frac{2}{3}$, rays III, 6, II; ventral rays I, 5, fin $1\frac{2}{3}$ to $1\frac{7}{8}$ in total head length.

Brown, clouded with darker. Obscure dark bar forward from eye across snout and jaws, second down over end of maxillary and third down to lower part of opercle. First dorsal with ill defined dark blotches. Four obscure dark transverse bands on caudal. Soft dorsal, anal and pectoral with small dark spots.

Hawaii, Philippines.

Günther's figure of Scorpaena
parvipinnis is greatly like
Sebastoopsis helloggi Jenkins,
showing distinct scales on its
maxillary and the anal spines
of similar length and proportions.
Although Jenkins's figure does
not show any scales on the
maxillary under a lens shows
it is with a number of very
small scales in the type. Gill
rakers $5 + 7$, short low knobs,
about $\frac{1}{2}$ of gill filaments, which 4
in eye. Head width $1 \frac{3}{5}$. Inter-
orbital $6 \frac{1}{4}$, deeply concave.

U. S. N. M., No. 50694. Honolulu.

D. P. Jenkins. Length 45 mm.

Type of Sebastopsis helloggi.

U. S. N. M., No. 52014. Negroa.

Bashford Dean. Length 42 mm.

As Sebastopsis scabra.

U. S. N. M., No. 55228. Reef
in front of Honolulu. August
15, 1901. U. S. Fish Comm. (03550).
Length 18 to 33 mm. Three examples.
As Sebastopsis helloggi.

Scorpaenodes scabra (Ramsay and Ogilby)

Sebastes scabra Ramsay and Ogilby,
Proc. Linn. Soc. New South Wales,
vol. 10, p. 577, 1885 (type locality,
Lark Reef, Australia).

Sebastopis scabra Jordan and Seale,
Bull. Bur. Fisher., vol. 25, p. 374, fig.
71, 1905⁽¹⁹⁰⁶⁾ (Apia; Pago Pago). —
Evermann and Seale, Bull. Bur.
Fisher., vol. 26, p. , 1906 (Bacon).
— Jordan and Seale, Proc. U. S.
Nat. Mus., vol. 28, p. , 1905 (Negros).
— Jordan and Richardson, Philippine
Journ. Sci., vol. , p. 51, 1910
(reference). — Kendall and Goldborough,
Mem. Mus. Comp. Zool., vol. 26, p. 314,
1911 (Borabora; Kusaie). — Fowler,

in preserved examples. Caudal deep
or dusky brown, often with transverse
pale gray to whitish basal band, often
absent with age, when fin appears
uniform dusky. Pectoral deep or
dusky brown, with terminal Third
formed largely or entirely as pale or
yellowish-brown blotch. Ventral
ventral - dusky.

East Indies, Philippines, Melanesia.
~~Known only from our series of examples~~
~~fixed specimens~~ This species belongs
with those we identify as Hepatus
nigrofuscus, Hepatus grammoptilus and
Hepatus variatus and Hepatus
in the pearly or whitish transverse caudal
band. Otherwise it differs from all in
the combination of color-design described
above. Especially characteristic is the
elongated horizontal humeral blackish
blotch and the pale end to the pectoral
fins. Ahl's figure is a fair outline of
the species, though is of such poor texture
that it fails to show the greatly contrasted
color pattern seen in most specimens.

~~Mem.~~ Bull. Bishop Mus., ~~vol.~~ no. 22, p. 33, 1925 (Samoa).

Scorpaenodes scabra Fowler, Mem.
Bishop Mus., vol. 10, p. 290, 1928
(Apia; Strong Island; Panape; Ebon
Island; ~~Apia~~ Kusaie; type of
Scorpaenopsis quiescens; Fate;
Tahiti; Guam; Borabora);
vol. 10, no. 5, p. 149, 1931 (Suva).
— Herre, Journ. Pan Pac. Res. Inst.,
vol. 6, no. 4, p. 13, Oct.-Dec. 1931
(New Hebrides); vol. 6, ⁷no. 1, p. 5,
Jan.-March 1932 (Tahiti). — Fowler,
Occas. Pap. Bishop Mus., vol. 9, no. 20,
p. 9, Aug. 1932 (Suva); Mem. Bishop
Mus., vol. 11, no. 6, p. 430, 1934
(reference). — Herre, Fishes
Philippine Exped., p. 65, 1931 (1934)
(Dumaguete; Punta Flecha).

1045

Depth $1\frac{3}{4}$ to 2; head $3\frac{1}{4}$ to $3\frac{1}{3}$, width
2 to $2\frac{1}{8}$. Snout $1\frac{1}{5}$ to $1\frac{1}{4}$; eye 4 to 5, $3\frac{1}{5}$
to $3\frac{3}{4}$ in snout, $1\frac{1}{3}$ to $1\frac{4}{5}$ in interorbital;
16 to 18 teeth in each jaw; maxillary $3\frac{1}{2}$
to $3\frac{2}{3}$ in head; interorbital $2\frac{7}{8}$ to 3,
convexly elevated; opercle, preopercle
flange and humeral arch feebly striate.
Gill rakers 6 + 13, short pointed.

Scales ovoid, very small, with fine,
close-set circuli; apical denticles 8 to 14,
with 9 or 10 transverse series of basal cusps.
D. \overline{IX} , 23, \overline{I} to 24, \overline{I} , with spine $1\frac{4}{5}$ to 2,
first ray $1\frac{3}{4}$ to $1\frac{4}{5}$; A. \overline{III} , 22, \overline{I} or 23, \overline{I} ,
third spine $2\frac{2}{5}$ to $2\frac{1}{2}$, first ray 2 to $2\frac{1}{10}$;
caudal deeply emarginate or lunate, with
ends elongated points, 2 to $2\frac{2}{3}$ in combined
head and body; least depth of caudal
peduncle $2\frac{1}{3}$ to $2\frac{1}{2}$ in head; pectoral 1;
ventral $1\frac{4}{5}$ to $1\frac{2}{5}$.

Largely uniform chocolate-brown, the
trunk and tail with exceedingly fine slightly
waved longitudinal parallel lines. Head
marked with thick-set small round spots
all greater than pupil and grayish
in color, variables more numerous and
close-set with age. Elongate black blotch
about equals pupil width and its length
 $1\frac{1}{2}$ eye diameters, horizontal in position.
Above of caudal spine dusky or
blackish. Fins all more or less deep
brown to dusky, - dorsals and anals both
with 6 to 9 longitudinal darker parallel
bands, which often obscure or absent

Scorpaenopsis guamensis (not Duoy
and Guimard), Seale, Occur. Pap.
Bishop Mus., vol. 1, no. 3, p. 121, 1900
(Guam).

Merinthe haplodactyla (not Bleeker)
Seale, op. cit., vol. 4, no. 1, p. 79, 1906
(Fate', New Hebrides).

Scorpaenopsis quiescens Seale, ~~to~~ op.
cit., p. 80, fig. 2 (no. 783), 1906 (type
locality, Tahiti).

Hepatus maculiceps uhl.

Hepatus maculiceps uhl., Mitteil. Zool. Mus.

Berlin, band 16, 1924, p. 36, ^{fig. 4,} New Britain.

Galassia, ^{heft 1,} New Pommernia.

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Depth $2\frac{2}{3}$ to $2\frac{4}{5}$; head $2\frac{1}{4}$ to $2\frac{2}{5}$, width $1\frac{3}{4}$. Snout $3\frac{3}{4}$ to $4\frac{1}{6}$ in head from snout tip; eye $3\frac{2}{3}$ to $4\frac{1}{10}$, $1\frac{1}{5}$ in snout, much greater than interorbital; maxillary reaches opposite eye center, expansion $1\frac{1}{4}$ to $1\frac{1}{3}$ in eye, length 2 to $2\frac{1}{5}$ in head from snout tip; bands of fine villiform teeth in jaws and on vomer, none on palatines; interorbital 6 to 9 in head, ^{concave} gill rakers 5 + 7, clavate, slightly longer than gill filaments or 2 in eye. Small nasal spine # above hind nostril; supraocular spines 3, followed by 1 postocular above and 2 each side of occiput, all large; small median postocular spine; suprascapula with long spine and one close before; opercle with 2 spines; suborbital stay

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with 5 spines, of which last 2 on preopercle edge, below which 2 more spines; large spine above pectoral origin.

Scales 38 to 42 in lateral line to caudal base and 4 to 6 more on latter; tubular scales 22 to 24 + 2 or 3 in lateral line; 6 scales above lateral line, 11 or 12 below, 6 or 7 predorsal. Head scaly, maxillary and muzzle naked. Head and trunk all with small skinny flaps and points. Scales with 10 basal radiating striae; apical denticles 32 to 35; circuli fine.

D. XIII, 8, I, fifth spine $2\frac{1}{3}$ to $2\frac{3}{4}$ in total head length, second ray $2\frac{1}{10}$ to $2\frac{1}{3}$; A. III, 5, I, second spine $1\frac{2}{3}$ to $1\frac{4}{5}$, second ray $1\frac{7}{8}$ to 8; caudal $1\frac{1}{2}$ to $1\frac{4}{5}$, convex behind; least depth of caudal peduncle

$3 \frac{5}{6}$ to $4 \frac{1}{2}$; pectoral $1 \frac{1}{3}$ to $1 \frac{2}{5}$; ventral $1 \frac{3}{5}$ to $1 \frac{2}{3}$.

Brown, with 4 transverse dark bands, everywhere mottled with darker. Vertical fins all rather pale terminally, dark colors of trunk invading basal regions; terminal portions with dark waved lines or streaks. Paired fins similar, only ventral more dusky and lines finer and more numerous.

Philippines, East Indies, Melanesia, Micronesia, Polynesia.

12253, 20483. Batan Island.

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June 5, 1909. Length 72 to 77 mm.

Four examples. Batan Island.

July 22, 1909. Length 63 to 73 mm.

14543. Batuanan Island.

June 3, 1909. Length 80 mm.

One example. Biri Channel.

June 1, 1909. Length 67 mm.

15567. Bugsuk Island, Balabac.

January 5, 1909. Length 63 mm.

19641. Bulan Island, Samalac.

September 13, 1909. Length 54 mm.

19445, 19446. Cagayan, Sulu.

January 8, 1909. Length 49 to 60 mm.

Three examples. Candaraman Island, Balabac. January 4, 1909.

Length 70 to 76 mm.

12097, 12099. Capunuyfugan.

Point, Mindanao. May 10, 1908.

Length 59 to 71 mm.

Four examples. Caracaran,

Batan Island. June 8, 1909. Length

60 to 92 mm. ^{malhon} 14840. Casagoran Island. July 27, 1909. Length

125 mm. D. ~~XIV~~, 9. No palatine teeth.

6859. Caxiguan Island. January 2,
1909. Length 60 mm.

16350. Chase Head, Endeavour
Strait, Palawan. December 22, 1908.
Length 71 mm.

4665 to 4667. Galvaney Island,
Rayay Gulf. March 9, 1909. Length
52 to 76 mm.

6795, 7372. Gigoro Point,
Dinapundan Bay, Samar. July 28,
1909. Length 76 to 100 mm.

Two examples. Gubat Bay,
Luzon. In tide pools. June 23, 1909.
Length 59 to 91 mm.

Three examples. Guinigan Island.
June 4, 1909. Length 62 to 85 mm.
One with D. XII.

6950¹³⁹⁸⁵, Iloilo market. May 31, 1908.
Length 85 mm.

Three examples. Jolo. March 6-7, 1908.
Length 83 to 120 mm. [430, 431.]

13929. Limpinigan Island.
September 11, 1909. Length 79 mm.

7870, 21102. Maculabo Island.

June 14, 1909. Length 67 to 83 mm.

Three examples.

15257, 15258. Near Palag Bay,

Luzon. June 16, 1909. Length 73 mm.

21021. Paron Paron, Albay Gulf,

Luzon. June 21, 1909. Length 93 mm.

One example. Philippines.

Length 77 mm.

10538. Pollock, Mindanao.

May 22, 1908. Length 93 mm.

20651. Port Ciego, Balabac.

January 3, 1909. Length 79 mm.

6B. Port Langcan, Palawan.

April 8, 1909. Length 81 mm.

10310, 10502. Port Maricaban.

July 21, 1908. Length 67 to 72 mm.

Larger with few scales on maxillary.

13403. Rapurapu Island.

June 22, 1909. Length 50 mm.

Nine examples. Tablayan,

Mindoro. Tide pool. December 13, 1908.

Length 27 to 64 mm.

15768. Sacol Island. September 9, 1909. Length 72 mm.

17587 to 17589, 17777 to 17781. San Miguel Island, Tabaco Bay. June 4, 1909. Length 70 to 93 mm.

19590. Simalue Island. September 22, 1909. Length 74 mm.

19562. Singaan Island. September 21, 1909. Length 68 mm.

20837. Taatan, Simalue Island. February 19, 1908. Length 72 mm.

14678. Taatan. February 20, 1908. Length 71 mm.

4901, 4902. Talajit Island, Brang Bay. March 15, 1909. Length 85 to 105 mm. Smaller with right maxillary with few scales, larger with left maxillary with few scales.

Three examples. Tapanzana Island. September 13, 1909. Length 54 to 72 mm.

16266. Teomabal Island. September 18, 1909. Length 80 mm.

10366. Tilig, Lubang Island.

July 14, 1908. Length 80 mm.

6161 to 6163. Tanguil Island,

east of Gumila. September 14, 1909.

Length 43 to 75 mm. Eleven examples.

8678, 8679. Tutu Bay, Jolo.

September 19, 1909. Length 84 to 93 mm.

Five examples. Reefs in Apra Bay,

Guam. November 19 to 21, 1907.

Length 48 to 78 mm.

14864. Dodepo and Tasejogo

Islands. November 16, 1909. Length

69 mm.

20806. Labuandata Bay, Celebes.

December 18, 1909. Length 73 mm.

13464. Limbe Strait, Celebes.

November 9, 1909. Length 62 mm.

Two examples. Limbe Strait.

November 11, 1909. Length 63 to 66 mm.

19794. Gomoro Island.

December 3, 1909. Length 78 mm.

14939. Jalise Island. November 9, 1909. Length 62 mm., tail broken.

One example. Tomahu Island. Tide pools. December 11, 1909. Length 43 mm.

U. S. N. M., No. 52290. Apia, Samoa. Bureau of Fisheries. Length 60 to 74 mm. Nine examples. As Sebastopseis scabra. Second anal spine $\frac{4}{5}$ to $\frac{7}{8}$ of depressed fin.

U. S. N. M., No. 55982. Bacon, Luzon. Bureau of Fisheries (4004). Length 70 mm.

U. S. N. M., No. 66029. Borabora, Society Islands. Albatross Collections. One example 42 mm. (dried).

Genus Sebastosemus Gill

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Sebastosemus Gill, Proc. U.S. Nat. Mus., vol. 28, p. 220, 1905. (Type Neosebastes entaxis Jordan and Starks, ~~entaxis~~ monotypic.)

Body more elongately ellipsoid, greatest depth but little premedian. Head large. Snout short. Eye impinging on upper profile, in front half of head. Mouth low, little inclined, jaws even. Maxillary extends below eye, expanded terminally. Armature of head well developed and prominent. Head and body well scaled, though fins largely scaleless. Dorsal spines 13, high or but little less than greatest body depth and membranes deeply incised. Soft dorsal small and

greatly lower than spinous dorsal.
Anal small, with 3 spines, mem-
branes deeply incised. Caudal
small. Pectoral moderate,
membrane entire, upper rays
branched. Ventral moderate.

Related to Sebastodes but
differs chiefly in its high dorsal
spines with 7 deeply-incised margins
and the well armed spiny ridge
of the suborbital stay.

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Sebastosomus entaxis (Jordan and Starks)

Neosebastes entaxis Jordan and Starks,
Proc. U. S. Nat. Mus., vol. 27, p. 120,
fig. 7, 1904 (type locality, Choshi,
Shimosa; Misaki); — Franz,

Abhandl. Kon. Bayer. Akad. Wiss.,
vol. 4, Suppl. Band 1, p. 71, pl. 5,
fig. 38 (young), 1910 (Yokohama;
Yagoshima; Igushi). — .

(— Gill, Proc. U. S. Nat. Mus., vol.
28, p. 220, 1905 fig. 2 (copied), 1905
(reference).)

Sebastosomus entaxis Gill, op. cit.
(reference). — Jordan, Yanaka,
Snyder, Journ. College Sci., vol. 33,
art. 1, p. 238, fig. 239 (copied), 1913
(reference).

Genus Hoplosebastes Schmidt

Hoplosebastes Schmidt, Compt.
Rend. Acad. Sci. Leningrad, p.
194, 1929. (Type Hoplosebastes
armatus Schmidt, monotypic.)

Body elongate, fusiform, compressed. Head moderate, compressed. Snout conic. Eye rather large, impinging on upper profile, largely advanced from middle of head. Mouth large, with lower jaw slightly protruded. Teeth very minute, in bands in jaws and on vomer, none on palatines. Maxillary reaches below eye, expanded behind. Interorbital deeply concave, and occiput with slight depression. Gill opening wide, membranes but narrowly

Neosebastella new genus

Type Neosebastella pristigenys
new species.

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joined across isthmus. Gill
rakers lanceolate, rather few.
Pseudobranchiae well developed.
Armature of head strong, spines
numerous. Suborbital stay
with rather numerous series
of spines. Scales small, ctenoid,
in oblique rows on body.
Skinny filaments or flaps
few and little developed.
Head, breast and prepectoral
region scaled, also caudal
and pectoral bases. Lateral
line complete, axial. Spinous
dorsal low, much lower than
soft dorsal. Anal like soft
dorsal, with second spine
longest and third but little
shorter, and first very short.
Caudal rounded. Pectoral

with broad base. Ventral⁷⁶³
inserted little before pectoral
origin.

Small handsome fishes,
with low spinous dorsal,
well armed head with jagged
edge to suborbital stay, and
head well scaled.

Analysis of Species

- a! Jaw even; maxillary reaches $\frac{3}{4}$ in
eye or to hind eye edge; postocular
scales to preopercular ridge 7. armatus.
- a! Lower jaw protruding; maxillary
reaches $\frac{1}{2}$ in eye; postocular scales
4 to preopercular ridge. pristigenys.

Hoplosebastes armatus Schmitt

Hoplosebastes armatus Schmitt,
Compt. Rend. Acad. Sci. Leningrad,
p. 194, figs. 1-2, 1929 (type locality,
Japan); Trans. Pac. Comm. Acad.
Sci. USSR., vol. 2, p. 9, figs. 14-15,
1931 (type, from Nagasaki).

1 example. Atulayan Bay, Luzon.

June 17, 1909. Length 41 mm.

20133. Bacoor, Luzon market. June 15, 1908. Length 108 mm.

20487.

~~1 example~~ Bataan Island, tide pool.

June 5, 1909. Length ⁵⁴⁴34 mm. 2 examples.

1 example. Bataan Island, tide pool.

July 22, 1909. Length 20 mm.

6776. Beach at village near Chase Head, Endeavor Strait, Palawan Island. December 22, 1908. Length 218 mm.

11 examples. Below mouth of Mindanao River, Cotabato, Mindanao. May 20, 1908. Length 43 to 72 mm.

20588. Bohol Island. April 9, 1908. Length 62 mm.

18477 and 19769. Bolalo Bay, Palawan Island. December 21, 1908. Length 50 to 143 mm.

5669, 5672, 5677. Busin Harbor, Burias Island. April 23, 1908. Length 240 to 255 mm.

Depth $3\frac{1}{10}$; head $2\frac{2}{5}$, snout
 $3\frac{1}{3}$ in head; eye $4\frac{1}{10}$, $1\frac{1}{10}$ in
snout, greater than interorbital,
maxillary extends little beyond
eye, expansion $1\frac{1}{3}$ in eye, length
 $1\frac{4}{5}$ in head; upper teeth in
broader band than lower band,
and narrow \sim -shaped band on
vomer; interorbital $6\frac{4}{5}$, slightly
concave. Gill rakers $4 + 11$.

Strong erect nasal spine;
3 close set antero-supraorbital
spines and 6 postero-supraorbital
forming kind of crest and posterior
largest; strong tympanic spine;
parietals with pair of high crests,
armed with 6 or 7 spines directed
backward; strong postocular
spine directed backward and
behind crest with 4 spines,
then followed by low ridge with

3 spines on posttemporal; 2
preocular spines, directed out
and down; suborbital stay
with 3 crests with spines, one
below first fourth of eye with
3 spines and small spine below,
second below second half of eye
with 6 spines and third behind
orbit with 8 spines; last crest
joined with strong spine at pre-
opercle which not far from 2
spines forming short crest on
upper angle of preopercle; 4
preopercle spines below; opercle
with 2 spines, opposite.

Pores 25 in lateral line,
each tubule with 2 spine like
appendages. On head only median
part of snout scaleless. Scales
ctenoid, not very rough. Front
nostril with flap.

D. XIII, 10, fifth spine $3\frac{3}{4}$ in ^{.767}
head, fifth ray $2\frac{1}{4}$; A. II, 6,
second spine $3\frac{3}{4}$, second ray
2; caudal $1\frac{1}{2}$; least depth of
caudal peduncle $3\frac{4}{5}$; pectoral
 $1\frac{1}{5}$, rays I, 7, X; ventral rays I, 5,
length $1\frac{7}{8}$ in head.

Brownish, probably red in
life. Six blackish cross bands
above lateral line, first on nape,
second before dorsal, third
between fifth to seventh spines,
fourth between ninth to eleventh
spines, fifth below soft dorsal
and sixth on caudal peduncle.
Second to fourth cross bands doubled
by lighter band in middle.
Traces of 3 or 4 bands diverging
from eye. Gray spots on snout. Faint
with oblique rows of blackish spots.
Length 157 mm. (Schmidt.)
Japan.

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Genus Thysanichthys Jordan
and Starks

Thysanichthys Jordan and
Starks, Proc. U. S. Nat. Mus.,
vol. 27, p. 122, 1904. (Type
Thysanichthys crossotus
Jordan and Starks, monotypic.)

Differs from Sebastodes chiefly
in the presence of filaments on
the head and along the lateral
line. No enlarged spine on
edge of preopercle or ridge
on opercle. Palatines with
teeth. Armature of head well
developed, especially spines on
top of head, along suborbitals
and preopercle edge. Dorsal
spines 13.

Thysanichthys crossotus Jordan
and Starks

Thysanichthys crossotus Jordan
and Starks, Proc. U. S. Nat.
Mus., vol. 27, p. 123, fig. 8, 1904
(type locality, Suruga Bay,
off Ose Point, in 63 fathoms).
— Jordan, Tanaka, Snyder, Journ.
College Sci., Tokyo, vol. 33, art. 1,
p. 240, fig. 175, 1913 (reference).
— Schmidt, Trans. Pac. Comm. ^{fig. 16,}
Acad. Sci. U. S. R., vol. 2, p. 103, 1
1931 (Sagami Bay).

Depth $2 \frac{3}{5}$; head $2 \frac{1}{4}$. Snout $3 \frac{3}{4}$ in head from snout tip; eye $3 \frac{3}{4}$, subequal with snout, greatly exceeds interorbital; maxillary reaches $\frac{1}{2}$ in eye, expansion 2, length 3 in head from snout tip; teeth in rather broad bands in jaws, in narrower bands on vomer and palatines; interorbital $5 \frac{1}{2}$, deeply concave, Gill rakers 7 on front limb of arch.

Basal, preocular, supraocular, postocular, tympanic, parietal and nuchal spines present. Preorbital with 3 lobes, front one broadly rounded, others angulated, spineless.

Ridge of 3 low spines extends along suborbitals. Preopercle spines 5, upper 3 sharp, others

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blunt and uppermost one hooked
upward. Opercle spines 2,
upper inclined upward, lower
little posterior. Two close set humeral^{spines}.

Pores 23 in lateral line;
scales 46 close above along
lateral line; 6 scales above,
11 below; 8 below suborbital
stay ridge. 8 spines on top of
head each with long filament
behind and longest $\frac{1}{2}$ of eye;
similar filaments behind pre-
orbital lobes, suborbital
spines, upper spines on preopercle,
23 filaments along lateral
line.

D. XIII, 11, I, third spine $3\frac{2}{3}$
in head, third ray $2\frac{1}{3}$; A.
III, 5, second spine 2, first ray
2; caudal $1\frac{3}{4}$, convex behind;
least depth of caudal peduncle

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$4\frac{3}{4}$; pectoral $1\frac{1}{4}$, rays 18; ventral
I, 5, fin $1\frac{3}{5}$ in head.

Pale brown. Trace of gray
blotch below first dorsal spine,
one below middle of spinous
dorsal and 1 below last spine.
Black spot on spinous dorsal
from ninth to twelfth spine.
Faint otherwise colorless.

Japan.

U. S. N. M., No. 50907, Suruga Bay,
off Ose Point, in 63 fathoms.
Albatross Collection 3720. Length
85 mm. Type.

Genus Hypomacrus Evermann and Seale

Hypomacrus Evermann and Seale,
Bull. Bur. Fisher., vol. 26, p. 102,
1906 (1907). (Type Hypomacrus
albaiensis Evermann and Seale,
monotypic.)

examples, especially darker ones, show 2 or 3 dark transverse bars or bands across chin or lower surface of head. No distinct dark humeral or shoulder blotch. Fins all pale or very light brownish. Spinous dorsal with irregular brownish cloudings, which in soft fin confined to rays as several brown blotches to each. Ventrals similar. Caudal pale with 5 or 6 dark gray transverse bands, usually faded in large specimens or with an marginal above and below. Pectoral pale or light brown, uniform. Ventrals more or less gray white to whitish, usually with several deep or dusky-brown blotches.

India, East Indies, Philippines, China, Japan. Similar to Vigorus oramin in the elongate body, but with fine white spots ~~usually~~ sharply defined and the caudal fin less forked. We follow Winter in the statement "no brown spot on the shoulder." Day says "a dark oval shoulder-mark" and also figures the same, ~~but~~ we ~~fail to find it in~~ ^{the young} ~~any~~ of our specimens, ^{though held in large examples} Our materials are very variable, often the entire general color may be clouded with darker, sometimes even with dusky spots here and there or between the white ones. In young examples the vertical fins are frequently speckled with dusky.

Xoropaenodes Bleeker 78
~~*Sebastopsis* Gill~~

Differs from ~~*Sebastopsis*~~ in the tenth to thirteenth pectoral rays much extended. Upper 9 pectoral rays subequal, their length $\frac{1}{2}$ of head; length of tenth ray $1\frac{1}{5}$ in head, eleventh to thirteenth successively shorter, the last 3 usually shorter than the upper 9 and not detached. An interesting genus with long narrowly pointed head and slender body also a greatly modified pectoral fin.

Hypomacrus albaiensis Evermann
and Seale

Hypomacrus albaiensis Evermann
and Seale, Bull. Bur. Fisher.,
vol. 26, p. 102, fig. 20, 1906 (type
locality, Bacon, Loroogon,
Philippine Islands). — Jordan
and Richardson, Philippine Journ.
Sci., vol. , p. 52, 1910 (reference).

Depth $2\frac{2}{3}$ to $2\frac{3}{5}$; head $3\frac{1}{2}$ to $4\frac{1}{8}$, width 2 to $2\frac{1}{8}$. Snout $2\frac{1}{3}$ to $2\frac{1}{2}$; eye $2\frac{1}{8}$ to $3\frac{1}{5}$, $1\frac{1}{5}$ to $1\frac{1}{3}$ in snout, equals or greater than inter-orbital; teeth about 38 to 40 in each jaw; maxillary $3\frac{1}{3}$ to 4 in head; inter-orbital 3 to $3\frac{1}{8}$, broadly convex; preopercle limb, opercle and scapular arch with fine, inconspicuous striae. Gill rakers 5+17, short, small, cuneate points.

Scales very minute, ovoid, cycloid, circuli 50 to 60. Cheeks usually with but a very few small scattered scales, frequently entirely naked.

D. XIII, 10, I, fifth spine $1\frac{3}{4}$ to 2 in head, third ray $1\frac{4}{5}$ to 2; A. VII, 9, I, third spine $1\frac{7}{8}$ to $2\frac{1}{8}$, third ray $2\frac{1}{4}$ to $2\frac{3}{5}$; caudal deeply emarginate, $3\frac{1}{4}$ to $3\frac{3}{4}$ in combined head and body; least depth of caudal peduncle $3\frac{7}{8}$ to $4\frac{1}{4}$ in head; pectoral $1\frac{1}{4}$ to $1\frac{1}{3}$; ventral $1\frac{2}{3}$ to $1\frac{3}{4}$.

Back and upper surfaces some-drab to -dull brown, below gray-white to white. Back and head above mid and sides, also sides of body variably though finely spotted with whitish, ~~these~~ ^{spots} and always smaller in size than dark interspaces. Frequently spots much smaller, about edges of back. Often lower surface may be dusky, especially in small examples, when spots are much larger than on flanks or back: none of spots extend on fins. Ventrals pale or yellowish-white. Nostrils

Depth $3\frac{1}{5}$ to $3\frac{1}{2}$; head $2\frac{1}{5}$ to $2\frac{1}{3}$, width $2\frac{1}{10}$ to $2\frac{1}{2}$. Snout $3\frac{1}{3}$ to $3\frac{4}{5}$ in head from snout tip; eye 4 to 5, $1\frac{1}{10}$ to $1\frac{2}{5}$ in snout, greatly exceeds interorbital; maxillary reaches $\frac{2}{3}$ to $\frac{7}{8}$ in eye, expansion 1 to $1\frac{1}{4}$ in eye, length $1\frac{7}{8}$ to $2\frac{1}{8}$ in head from snout tip; orbit 4 to $4\frac{1}{3}$; bands of very fine villiform teeth in jaws and small patch each side of vomer, none on palatines; interorbital 6 or 7 in head from snout tip, deeply concave. Gill rakers 5 to 7 + 12 to 15, of which 4 to 6 both above and below rudiments; lanceolate, 2 times long as gill filaments or 2 to $2\frac{1}{2}$ in eye. Pair of antero-supraorbital spines and 3 postero-supraorbitals, followed by pair of spines at occipitals and pair at nuchals;

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strong suprascapular spine, with 2 postoculars forward; 2 blunt lower wide preorbitals and suborbital stay with 2 spines and ends behind at preopercle, with strong backward directed spine with small auxiliary spine at its front base; 2 strong, subequal opercular spines; humeral spine small, flat.

Scales 35 or 36 + 4 close along above lateral line; 21 or 22 + 1 or 2 tubular scales in lateral line; 5 scales above lateral line to spinous dorsal origin, 8 to 10 below, 8 to 10 predorsal forward to occiput or 18 or 19 forward middle of eye in interorbital space; 7 rows behind lower eye edge to angle of preopercle at junction with suborbital stay and 8 or 9 below latter in vertical count.

snout before nostrils, inclusive of maxillary, naked, rest of head scaly. Short nasal, supraorbital, occipital, nuchal, preorbital and lower preopercular spine, with shiny flap. Scales with 5 to 9 basal, close set and slightly radiating basal striae; 25 to 57 small, slender, short, uniform. apical denticles, with 2 to 5 transverse series of basal elements; circuli very fine.

D. XIII, I, 9, I, fourth spine 4 to 4 1/4 in total head length, fourth ray 2 4/5 to 3; A. III, 5, I, second spine 2 to 2 3/5, first ray 2 to 2 1/4; caudal 1 1/2 to 2, rounded behind; least depth of caudal peduncle 4 to 5; pectoral 1 1/4 to 1 3/5, rays 7 or 8, VI or VII, uppermost of simple ones extended behind and longest rays of fin; ventral I, 5, fin 1 3/5 to 2 in total head length.

786

Brown, with irregular dark brown blotches on back; first at front of spinous dorsal, second at middle or hind part of spinous dorsal and third below soft dorsal. Head with dark and pale shades, and blackish blotch on subopercle or behind area between 2 preopercular spines. Jaw or lips with obscure dark blotches. Iris dark gray. Dorsals pale, with dark blotches of back reflected as black basally. Anterior part of soft dorsal blackish. Anal whitish, with dusky to blackish basally and some dusky on rays terminally. Caudal pale to whitish, mottled with brown and dark transverse basal bar. Pectoral brown above, simple rays whitish and upper part of fin mottled with brown.

787

Ventral whitish in front and basally, fin medially gray, mottled darker.

Philippines, East Indies.

Characteristic is the dark blotch on the lower side of the head, often very contrasted, and the variegated coloration.

10852, 16279, 16281. Biri Channel.

June 1, 1909. Length 61 to 71 mm.
Six examples.

[1617.] Caracaran, Batan Island.

June 8, 1909. Length 43 to 60 mm.
Three examples.

[1119, 1120] Limbones Cove.

February 8, 1909. Length 42 to 55 mm.
Three examples.

19029. North west Verde Island.

July 22, 1908. Length 48 mm.

Two examples. Port Jamelo,
Luzon. July 13, 1908. Length 42 to 54
mm. Two examples.

20797. Port Matalvi, Malapascua
Island. November 22, 1908. Length 54
mm.

17173. Port Matalvi. November
23, 1908. Length 79 mm.

14614, 18341, 20437, 20438. Port
Palapay. June 3, 1908. Length 41 to
72 mm. Eight examples.

8677. Tuta Bay, Jolo. September 19, 1909. Length 85 mm. ⁷⁸⁹

Two examples. Buba Buba Island, Gulf of Tomini, Celebes. November 20, 1909. Length 35 to 51 mm.

7785. Ianawan and Si Amil Island. September 27, 1909. Length 43 to 66. Six examples.

19952. Gane Road, Gillolo Island. December 1, 1909. Length 69 mm.

One example. Limbe Strait, Celebes. November 10, 1909. Length 63 mm.

Two examples. Limbe Strait. November 11, 1909. Length 44 to 49 mm.

One example. Mabul Island. September 29, 1909. Length 49 mm.

One example. Talise Island. November 9, 1909. Length 39 mm.

One example. Toglian Bay, Togian Island. November 19, 1909. Length 51 mm.

U.S.N.M., no. 55902. Bacon, Sarogon. Charles J. Pierson. Bureau of Fisheries (). Length 66 mm, Type!

790

Genus Neosebastes Guichenot

Neosebastes Guichenot, Mem. Soc.
Imp. Sci. Nat. Cherbourg, vol. 13,
p. 83, 1867. (Type Neosebastes
panda Guichenot, designated by
Bleeker, Verh. Kon. Akad. Wet.
Amsterdam, vol. 16, no. 2, p. 3, 1876.)

Body elongately ovate, compressed.
Head large, compressed. Snout
moderate. Eye large, elevated,
largely or entirely premedian.
Mouth moderate, low or
little inclined. Maxillary
extends below eye, expanded
terminally. Teeth fine, small.

[1843, 1844.] Cebu market. August 28,
1908. Length 123 to 127 mm. Two
examples.

6365. Jolo, Jolo Island. March 7,
1908. Length 165 mm.

February 8, 1908.

4795 and 4796. Jolo market. Hair
brown generally, slightly darker on
back and shading to dirty mottling
on white below. Dorsal darker marginally,
extreme tip with narrow white line,
almost black submarginally. Anal
sage green, with 3 darker irregular
bands, broadest near margin and
edge^{of fin}, narrowly white. Caudal like body,
darker terminally, white edge broadens
at tips of lobes. Pectoral darker on
inner surface and terminally, tips

in bands in jaws, on vomer and palatines. Armature of head well developed and usually row of spines on suborbital stay. Scales ctenoid, small. Lateral line rather high at first, complete, axial. Head scaly. Fint, except caudal base, naked. Spinous dorsal large, front spines high, 13 in number, and rays 8. Anal small, like soft dorsal, with 3 spines and 5 ~~rays~~ or 6 rays. Pectoral large, rays branched on lower ones variably simple. Ventral moderate, with spine and 5 rays.

Analyses of Species

792

- a. no deep naked nuchal groove.
- b. Anal spines all moderate, second not over $\frac{3}{4}$ of soft dorsal height.
- c. Less than 40 pores in lateral line; depth over 3.
- d. Some of lower pectoral rays longer than upper rays; supra-orbital spines smaller, not overhanging eye.
- e. Soft dorsal with large blackish spot. incisipinnis.
- e. Soft dorsal without black spot. nigropunctatus.
- d. Pectoral edge evenly rounded; supraorbital spine large, overhangs eye. thetidis.
- c. More than 40 pores in lateral line; depth 3; pectoral edge evenly rounded. scorpaenoides.

⁷⁹³
b.["] Second anal spine nearly high
as soft fin. pantica.

a.["] A deep naked nuchal groove.
close behind eyes. panda.

Heosebastes incisipinnis Ogilby

Heosebastes incisipinnis Ogilby,
 New Fish. Queensland Coast, p. 104,
 Dec. 20, 1910 (type locality, Off
 Cape Moreton, Queensland;
 Double Island; Fraser Island
McCulloch, Austral. Mus. Mem.,

No. 5, pt. 3, p. 386, Nov. 28, 1929

(reference).

Biol. Res. Endeavour, vol. 3, pt. 3, p. 155,

pl. 29, April 21, 1915 (25 miles S.E. of
 Double Island Point; 3 miles S.E. of
 Double Island Lighthouse; Wide
 Bay, Queensland). — McCulloch and

Whitley, Mem. Queensland Mus., vol.

8, pt. 2, p. 163, July 7, 1925 (reference).

— McCulloch,

22919. Busin Harbor, Burias Island.¹¹⁷²

April 22, 1908. Length 62 mm. (D. 5640.)

Anal with 5 or 6 dark longitudinal bands, and both dorsals more or less unicolor except paler blotches along base. Hind caudal portions broadly pale.

7202. Cabuyan, Hinunangan Bay, Leyte Island. July 30, 1909. Length 218 mm.

5550. Catuingan. April 17, 1908.

Length 195 mm.

7744. Caxiungan Island, near Balabac.

January 2, 1909. Vertical fins blackish at tips, extreme margin white.

Dorsal without bars. Anal with 3 or 4 slightly oblique bars. Length

282 mm.

Heosebastes nigropunctatus McCulloch

Heosebastes nigropunctatus McCulloch,
Biol. Res. Endeavour, vol. 3, pt. 3,
p. 157, pl. 30, April 21, 1915 (type
locality, South Kangaroo Island,
South Australia). Austral.

Mus. Mem., no. 5, pt. 3, p. 386,
Nov. 28, 1929 (reference).

(— Waite, Rec. South Austral. Mus.,
vol. 2, no. 1, p. 164, fig. 269, April 23,
1921 (reference). — McCulloch,

1171

Red Sea, East Indies, Philippines,
Melanesia, Micronesia, Polynesia.

Distinguished from Acanthurus
unicornis by the lower front basal
edge of the rostrum falling close
behind the front edge of the upper
jaw, so well shown in Günther's
figures. Our examples show a much
greater range in variation so we
have given the accompanying figures
of the head.

8631 and 8632. Biri Channel. June 1,
1909. Length 248 to 278 mm.

9942. Biri Channel. June 2, 1909.
Length 140 mm.

7807, 7810, ^{7826,} 7827. Bungsak Island. January
5, 1909. Length 280 to 421 mm.

Neosebastes thetidis Waite

795

Sebastes thetidis Waite, Australian Mus. Mem., no. 4, pt. 1, p. 100, pl. 20, Dec. 23, 1899 (type locality, Between Port Jackson and Port Kembla, New South Wales, in 55 to 78 fathoms); no. 5, pt. 3, p. 386, Nov. 28, 1929 (reference).

Sebastodes thetidis Waite, Mem. New South Wales Nat. Club, vol. 2, p. 47, 1904.

Neosebastes thetidis McCulloch, Biol. Res. Endeavour, vol. 3, pt. 3, p. 154, April 21, 1915 (off eastern Tasmania, 60 to 100 fathoms). — Waite, Rec. South Australian Mus., vol. 2, no. 1, p. 165, fig. 270, April 23, 1921 (Glenelg). — McCulloch, Austral. Mus. Mem., no. 5, pt. 3, p. 386, Nov. 28, 1929 (reference).

55105 U.S.N.M. Honolulu. Albatross
Collection. Length 134 to 147 mm. 2 examples.

55429 U.S.N.M. Hilo, Hawaii,
from dolphin's stomach. July 18, 1961.
Bureau of Fisheries. Length 30 to 34 mm.
4 examples.

55483 U.S.N.M. Honolulu. Dr. D.P.
Jenkins. Length 150 to 393 mm. 4 examples.

55970 U.S.N.M. San Fabian, Philippines.
Bureau of Fisheries. Length 66 mm.

58518 U.S.N.M. Honolulu. E.L. Berndt.
Length 70 mm.

59697 U.S.N.M. Matsushima Bay,
Japan. Dr. H. M. Smith. Length 80 mm.

71661 U.S.N.M. Lafa, Okinawa.
Albatross Collection 1906. Length 20 mm.

82907 U.S.N.M. Oahu. Wilkes Exploring
Expedition. Length 73 mm.

Heosebastes scorpaenoides Guichenot

Heosebastes scorpaenoides Guichenot,
Mém. Soc. Imp. Sci. Nat. Cherbourg,
vol. 13, pt. 2, p. 83, 1867 (type locality,
Melbourne, Victoria). — McCulloch,
Australian Mus. Mem., No. 5, pt. 3, p.
386, Nov. 28, 1929 (reference).

— McCulloch, Biol. Res. Endeavour,
vol. 3, pt. 3, p. 153, April 21, 1915
(diagnosis in key). — White, Rec.
South Austral. Mus., vol. 2, no. 1, p. 163,
fig. 267, April 23, 1921 (reference).

Sebastes scorpaenoides Klunzinger,
Sitzb. Abh. Wiss. Wien, Math. Naturw.
Kl., ^{ser.} vol. 80, p. 365, pl. 5, fig. 1, 1880.
(head)

and Kingmills). — Day, Fishes of India,
pt. 2, 1876, p. 209, plate 48, fig. 4. — Peters,
Monatsb. Akad. Wiss. Berlin, 1876, p. 440
(Mauritius). — Schmeltz, Mus. Godeffroy
Cat., no. 6, 1877, p. 15 (Zanzibar). —
Klunzinger, Fisch. Roth. Meer., 1884, p. 86.
— Boulenger, Proc. Zool. Soc. London, 1889, p.
239 (Muscat). — Day, Fauna British India,
vol. 2, 1889, p. 146, fig. 55. — Vinciguerra,
Spall. Giorn. Roma. Sci. Biol., vol. 19, ^{no. 2},
1890, p. 486 (Zanzibar). — Weber, Siboga
Exped., band 65, 1913, p. 321 (Salayer). —
Zugmayer, Abhand. K. Bayer. Akad. Wiss.,
band 26, abth. 6, 1913, p. 12 (Oman).
Hasenus hoedtii Bleeker, Nat. Tijds. Ned. Indië,
deel 5, 1853, p. (319) 339, Ambonina; deel 6,
1854, p. 457 (Ambonia); deel 8, 1855, p. 393
(Ambonia).

Scorpaena ambigua Klunzinger,
Archiv Naturg., vol. 38, pt. 1, p. 27,
1872 (type locality, Hobson's Bay,
Victoria).

haso brachycentron (Valenciennes).
~~haso brachycentron Valenciennes, Hist. Nat.
 Poiss., vol. 10, 1835, p. ²⁷⁵~~203~~. Wagner.~~

Frontal horn with axis passing through
 orbit. D. V, 29; d. II, 28. Gray. Length
 512 mm. (Valenciennes.)

Apparently close to haso unicornis
 but with very strong dorsal spines.
 only half so long as in that species.

Neosebastes pantica McCulloch and Waite

Neosebastes pantica McCulloch and Waite,
Rec. South Australian Mus., vol. 1,
p. 64, pl. 4, fig. 1, 1918 (type locality,
Spencer Gulf, South Australia);
Australian Mus. Mem., no. 5, pt. 3,
p. 387, Nov. 28, 1928 (reference).

— Waite, Rec. South Australian
Mus., vol. 2, no. 1, p. 166, fig. 271,
April 23, 1921 (reference). —
McCulloch,

1170
 $1\frac{1}{2}$ to $1\frac{3}{5}$; ventral $1\frac{7}{8}$ to $2\frac{1}{4}$; 2 caudal
bucklers, each with large keel, front
one larger and in adult $1\frac{1}{2}$ in eye.

Largely uniform brown. Iris brown.
Dorsals and anals dusky brown,
each with submarginal deeper or
more blackish band, edges of
rayed fins narrowly whitish; anal
with 2 deep dusky longitudinal bands
besides border. Caudal deep brown,
hind edge whitish, broader in young
in which it extends forward a little
along upper and lower edges. Pectoral
rather deep brown, hind edge pale
or whitish. Ventral dusky terminally,
paler basally.

~~Philippines, Melanesia, Micronesia,~~
~~Red Sea, East Indies,~~

799

Heosebastes panda (Richardson)

Scorpaena panda Richardson, Ann.
Mag. Nat. Hist., London, vol. 9,
p. 216, May 1, 1842 (type locality:
Abrolhos, Western Australia).

— Günther, Cat. Fish. Brit. Mus., vol.
2, p. 117, 1860 (type ~~loc~~, from King George's
Sound). — Macleay, Proc. Linn. Soc.
New South Wales, vol. 5, p. 432, 1881 (copied).

~~Heosebastes~~ pandas McCulloch, Austral.
Mus. Mem., no. 5, pt. 3, p. 386, Nov.
28, 1929 (reference). Richardson,
Schth. Voy. Erebus and Terror, p.
70, pl. 41, figs. 3-4, 1844-48 (west
coast of Australia, King George's
Sound, Houtman's Abrolhos).

469

Depth 2 to $2\frac{2}{3}$; head $3\frac{2}{5}$ to 7, width $1\frac{7}{8}$
to $2\frac{2}{5}$. Snout $1\frac{2}{5}$ to $1\frac{3}{5}$; eye $2\frac{3}{5}$ to $4\frac{1}{7}$,
 $1\frac{3}{4}$ to $2\frac{7}{8}$ in snout, 1 to $1\frac{2}{3}$ in interorbital;
teeth 46 to 54 in jaws, small, inconspicuous;
maxillary $3\frac{1}{2}$ to $4\frac{1}{3}$ in head; interorbital
 $2\frac{7}{8}$ to $3\frac{1}{2}$, broadly convex. Gill rakers ^{3 to} 5 + 9,
short, robust, conic tubercles.

Skin everywhere minutely asperous,
asperities coarser in young.

D. V, 28, I, to 29, I, first spine $1\frac{3}{4}$ to
 $2\frac{1}{10}$ in head, first ray 2 to $2\frac{3}{5}$; A. II, 28, I
to 29, I, second spine $2\frac{3}{4}$ to $3\frac{1}{2}$, first
ray 3 to $3\frac{2}{3}$; caudal little emarginate,
nearly truncate with age, length to
tip of upper lobe 1 to $1\frac{1}{4}$; least depth
of caudal peduncle $4\frac{1}{5}$ to $5\frac{3}{4}$; pectoral

Neosebastes panda Guichenot,
 Mém. Soc. Sci. Cherbourg, vol. 13,
 p. 83, 1867.

— McCulloch, Biol. Res. Endeavour,
 vol. 3, pt. 3, p. 154, April 21, 1915
 (Doubtful Island Bay; Great Australian Bight).

~~Waite, Rec. South Austral. Mus.,~~
~~vol. 3, pt. 3, p. 154.~~

— McCulloch and Whitley, Mem.
 Queensland Mus., vol. 8, pt. 2, p. 163,
 July 7, 1925 (reference).